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INDIA RUBBER WORLD

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Volume 92 | **September 1, 1935** | **Number 6**

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Published monthly by Bill Brothers Publishing Corp., 420 Lexington Ave., New York, N. Y. Cable Address, Elbill, New York. Subscription $3.00 per year postpaid in the United States and Mexico; $4.10 per year postpaid to Canada; $4.00 per year postpaid to all other countries.

Other Bill publications are: *Drapery Profits, Premium Practice, Rug Profits, Sales Management, Soda Fountain,* and *Tires.*

INDIA RUBBER WORLD

Published at 420 Lexington Avenue, New York, N. Y.

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Uncle Sam Wants to Help

National Housing Act Amended to Aid Rubber Plant Improvement Financing

Robert B. Smith [1]

THE aim of the Federal Housing Administration is to stimulate activity in capital industries by assisting in the matter of credit extension to those business men and home owners that have been compelled, by lack of money, to neglect necessary and desirable modernization projects.

This article written especially for INDIA RUBBER WORLD *is impressive in that F.H.A., a government agency, reveals the liberal application of the plan, the simplicity of the loan procedure, and the studied absence of discouraging time-consuming red-tape requirements, so characteristic of projects sponsored by the government.*

The publishers of this magazine have made an extensive study of the whole subject of industrial loans, such as those now available via F.H.A. The knowledge they have gained will gladly be made available, and without obligation, to interested members of the rubber industry.

IT'S many a long mile from the collection of rubber in the jungles of tropical countries to the merchandise marts of the world. The rubber toy that delights the child, the tire necessary to the motorist, and the many articles of utilitarian nature in daily use never even suggest the engrossing history and romance behind the rubber industry. Notwithstanding its thrilling story, rubber must be translated into commercial terms and the product be prepared through many processes before it reaches the user.

Owing to the financial stringency of the past few years many factories engaged in rubber output unfortunately have been forced to operate with impaired efficiency. Rehabilitation of plants is often necessary as is the replacement of machinery and equipment, and until recently funds for these purposes frequently have been lacking.

Ample credit from private financial institutions is now available for the modernization of establishments, and members of the rubber industry desirous of bringing their plants and equipment up to the high standards required for successful business are encouraged to familiarize themselves with the terms of the National Housing Act as amended.

The amendments allow for the insurance of credit advanced by private financial institutions in amounts up to a maximum of $50,000 for repair, alteration, addition, and improvement of real property improved by, or to be converted into certain classes of structures, including manufacturing and industrial plants. Numerous other types of buildings are likewise included, as is the purchase and installation of certain types of equipment and machinery peculiarly adapted to the conduct of the businesses housed in the properties and necessary to their operation.

Any maker of rubber goods, dealer, or industrialist who desires to finance work on his place of business and who has a good credit rating may obtain the necessary money with which to carry out improvements under the Modernization Credit Plan, provided such improvements do not cost in excess of $50,000 and provided the lending institution is satisfied as to the soundness of the loan. Credit that threatens to become burdensome will not be advanced.

The procedure for obtaining funds is simple. An inventory of the needs of the business is made and a cost estimate prepared. The applicant takes these figures, together with his balance sheet, to a bank or other lending institution holding a contract of insurance with the Federal Housing Administration and makes a credit statement. Then, if the work he contemplates is found to be permissible under the regulations and his credit

(*Continued on page* 34)

[1] Assistant to the administrator of the Federal Housing Administration.

Contributors to Rubber Compounding Progress

Binney & Smith Co.'s Technical Resources

D. C. McRoberts

"THE conviction seems more and more prevalent that the full reenforcing capabilities of fine pigments such as carbon black have not as yet been fully developed. A great deal of thought is therefore being devoted to the study of improved means of dispersion of such ingredients in rubber. The various conditions of milling and the effect of dispersing agents are examples of the lines along which modern study of this problem is progressing.

"This naturally leads to the question of what is happening to the rubber phase during the dispersion process. In other words, what damage, if any, will overmastication do to the rubber quality? What influence do these conditions exert on aging behavior? What is the effect of mill opening during such mastication?"

The above remarks made by W. B. Wiegand at a special meeting of the London Section of the Institution of the Rubber Industry, July 20, 1931, were introductory to the presentation of a paper[1] in partial answer to the proposed questions—the results of a painstaking research extending through a period of approximately five years of time. This example is but one picked at random from the countless cases illustrative of ingredient manufacturers' rubber and compounding research activities that stand as distinct and valuable contributions[2] to the rapidly accumulating fund of scientific rubber manipulating intelligence. It is but one of a vast number that are a credit to Binney & Smith Co.'s diversified scientific department.

The purpose of this article is to trace the events leading to the inception and growth of the technical policy and facilities of Binney & Smith Co. rather than to treat, at best inadequately, of the accomplishments that have resulted.

These, after all, have been extensively presented and published in this country and in other nations for the enlightenment of those persons concerned with the increasingly effective practical applications of materials and processes in rubber manufacturing, as well as to exchange views for the stimulation of cooperative research with those engaged primarily in the business of unraveling the obscurities of the underlying scientific principles affecting rubber and its combinations. These Binney & Smith contributions are listed in bibliography at the close of this article.

Practical Experience a Pioneer

The carbon black industry, like many others, owes its beginning and most voluminous applications to the persistent efforts and diligence of practical-minded men of former generations, struggling with economic necessity and ever alert to evaluate the commercial importance of any unexpected observation resulting from experimental or accidental occurrence. Explanation of the scientific principles involved—theory after the fact—remain then for the research workers of succeeding generations to decipher, followed by product, process, and application refinements resulting in stimulation of a new era of industrial growth.

Joseph W. Binney was one of about ten lamp black manufacturers in the United States in 1864. Several of these were ink makers that produced black sufficient only for their own needs. Oils of almost any available kind, including mainly those of fish and rosin, were utilized then as the source of lamp black. Carbon black, costing $5 to $6 a pound, from gas was produced at that time, but sparingly because of the limited supply of this natural resource.

Gaining experience along with his father, Edwin Binney pursued black manufacturing, and as natural gas became more plentiful, he conducted experiments in collaboration with various manufacturers of the eighties which resulted in the development of the present universally used channel process of producing carbon black.

Carbon Black for Color

The manufacturing experience and practical development ability of Mr. Binney and the distribution acumen of C. Harold Smith were combined in a business partnership in 1882, which in the succeeding three decades established the use of American made lamp and carbon black products of independent plants as well as those in which the partnership was financially interested, in all the civilized countries of the world. While during most of this period the blacks were utilized mainly in ink, paint, and paper, they found limited outlet in rubber compounding for tinctorial purposes only. Near the close of this period, however, the discovery of the incomparable value of carbon black to tire tread compounds proved to be a circumstance that was destined to bring rapid expansion of the carbon black industry to the then-inconceivable proportions—approximately 3,000,000 pounds in 1885, 25,000,000 in 1912, 175,000,000 in 1925, and 380,000,000 in 1934.

Carbon Black for Wear

About 1910 a new cable cord tire construction was invented by the Silvertown Co. of England. For no other than reasons of distinctive appearance contrasting it with the universal white color of tires of that day the inventors requested of Binney & Smith's English office its most powerful tinctorial black. Thus channel carbon black

[1] "Effect of Overmilling on Compounded Rubber." *Trans. Inst. Rubber Ind.*, Vol. VII, No. 6.

[2] "Contributors to Rubber Compounding Progress." INDIA RUBBER WORLD, June 1, 1935, pp. 39-41; July 1, pp. 31-34.

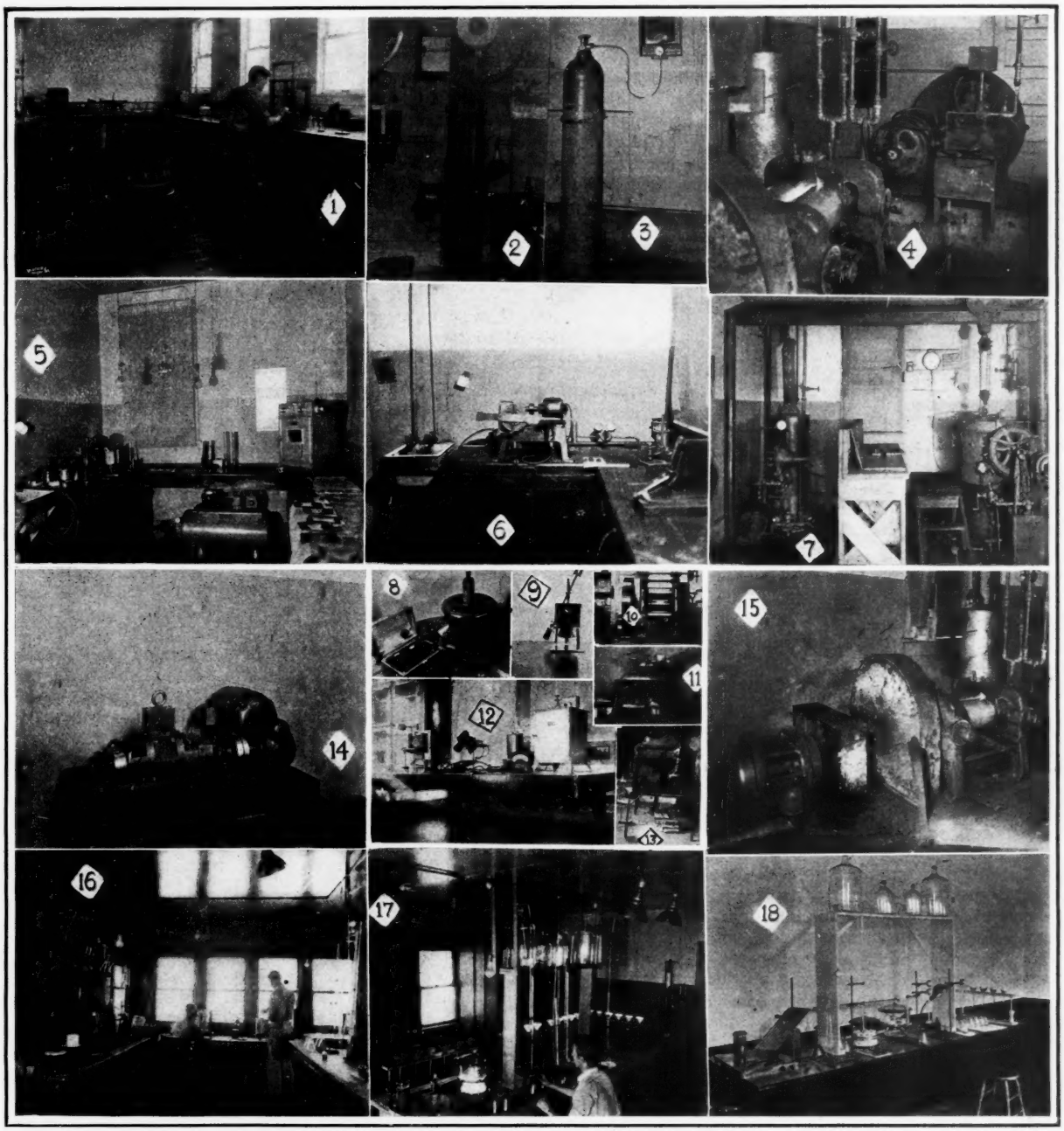
No. 40 found its way into these special tires in relatively low percentage, but enough to give a dark tread and sidewall covering.

Investigations by The B. F. Goodrich Rubber Co. of this patented tire revealed to them its unusual wear resistance. Subsequent experimentation[3] by J. D. Tew, now Goodrich president, with the aid of George Oenslager led to high carbon black content treads; a contractual guarantee by Binney & Smith Co. to supply what seemed then a fairy-tale-like yearly volume of the material; and what proved to be the beginning of a new era of volume, development, and service in both the tire and carbon black industries.

Science Has a Call

The early years of the wedded relation of these two

[3] "Tires and Their Place in Automotive Transportation." Paper presented by K. D. Smith, technical superintendent, tire division, B. F. Goodrich Co., Akron, O., at the thirty-eighth annual meeting of the American Society for Testing Materials, Detroit, Mich., June 24 to 28, 1935.



Figs. 1-7. Pampa, Tex., Field Laboratory: 1. D.P.G. Test Shaking Machine and Porritt Grit Tester; 2. One of a Battery of Scott Testers; 3. Oxygen Bomb Aging Room; 4. Laboratory-Size Banbury; 5. Geer Aging Oven Containing a Williams Plastometer; 6. Du Pont Abrader; 7. Small French Press with Pump and Steam Plant. Figs. 8-13. Miscellaneous Equipment: 8. Detrition Tester in Long Island Laboratory; 9. Joule Effect Rubber Engine; 10 and 11. Calender and U. S. Abrader in L. I. Laboratory; 12. Volatile Testing Equipment in Fairbanks, La., Laboratory; 13. Miniature Burner House in Fairbanks Laboratory. Figs. 14-18. Borger, Tex., Laboratory: 14. Midget Banbury; 15. Small Mixing Mill; 16. Making Volatile Tests—Porritt Grit Tester at Left; 17. Making D.P.G. Adsorption Tests; 18. Flow and Adsorption Testing Unit.

industries necessitated close cooperation between the principals of this revolutionizing episode. It soon became evident that producing carbon black for rubber use would require a very different approach from that previously accorded other trades. The necessity of a high degree of uniformity, of knowing of what factors uniformity fundamentally consisted, and finding how to measure and control them, the reasons underlying the phenomenal reenforcing effects of carbon black in rubber as a basis for determining even more suitable varieties, the explanation of the causes of cure retardation as a means to its possible control, and others were problems gradually recognized as being of a type beyond the practical man to approach and that pointed to the need of scientific ability and facilities.

The early trail of rubber-carbon black technique was blazed principally by the tire company chemists. Factory difficulties attending mixing, curing, and fabrication of the black containing stocks, and also at times with the service of the tire, resulted in the conclusion that rubber research alone would not suffice for both industries, that chemical as well as physical research should be addressed to carbon black itself. Thus Binney & Smith began intensive research in 1917 into the chemistry and physics of carbon black and of carbon black-rubber combinations.

These earlier years had also revealed the inadvisability and the practical impossibility of depending on a variety of independent and unrelated carbon black plants to supply materials of reliable uniformity.

This situation necessitated a correction which was effected by the merger of a number of conveniently grouped independent plants, some partially owned by Binney & Smith, into a single producing organization, Columbian Carbon Co. Under this integrated plan the two companies function as one large carbon black organization, whereby technical, production, and sales activities are common, complete, and unified interests, although operating under separate corporate structures.

Laboratory at Each Plant

Each of the plants is equipped with a process control laboratory charged with the responsibility of constantly maintaining the prescribed standards of burning house draft, temperature, tip settings, channel speeds, gas pressures, etc., as well as to take representative samples of gas for periodic analysis in the organization field laboratories.

Rubber Laboratories for Product Control

Two field laboratories serve the Texas plants and another those in Louisiana. Each of these laboratories is completely equipped for all types of finished product control testing, important among which are all the various types of compounded rubber tests. In addition these laboratories have facilities for certain types of carbon black processing research. The function of first call, however, is the exhaustive product control of the various types of blacks.

Long Island City Master Control Laboratory

In this they are checked by the master control laboratory in Long Island City, N. Y. Here again all types of rubber testing equipment are in operation, including those necessary to latex compounding experiments and investigations. This laboratory serves also as a rubber testing service department for the New York City organization.

Research Facilities

A small but fully equipped chemical and physics laboratory is maintained in connection with the New York office. Here also are the offices of the technical service department, which directs all technical activities.

Fundamental investigations of rubber are conducted for the most part in the Easton, Pa., laboratory, the equipment of which exists for experiments on almost any type of rubber problem from factory size mixing through curing, to lacquer finishes for rubber products.

The Magnetic Pigment Co., Trenton, N. J., a Columbian subsidiary, maintains another chemistry, physics, and optical laboratory for research work in connection with various iron oxides and their manufacture for use in rubber, paints, etc.

The facilities of Mellon Institute also become a part of the research organization by virtue of a fellowship maintained by Columbian Carbon Co. since 1927 for advancement of pure research on carbon black and its applications.

Personnel

These scientific departments, approximating 8,000 square feet of floor space, have grown since 1917 to serve ink, paint, and rubber interests, but mainly the latter. Starting prior to that date with the services of one consulting chemist, the technical force has grown to thirty-six men, most of whom are graduates of scientific schools and that have since contributed conspicuously to the scientific accomplishment benefiting the rubber industry as well as others.

Contributions

Among the problems that have been worked out to a successful issue, resulting in forward strides in the technique of rubber compounding, are the following:

1. The use of properly prepared carbon black to increase the dielectric resistance of insulating oils. U. S. patent No. 1,822,072.
2. The value of controlled percentages of special black in rubber for direct electrical insulation. U. S. patent No. 1,938,308.
3. The pioneering development of high carbon black abrasion resisting stocks like tap soles. U. S. patent No. 1,578,875.
4. Micronex Beads, or carbon black in the pellet or so-called dustless form. Because of the lessened tendency to fly and discolor other stocks, this invention has allowed the use of black in places otherwise commercially impractical and has facilitated certain handling problems. U. S. patent No. 1,889,429.
5. The effect of heat treatment in producing new and improved forms of carbon black. Re-issue U. S. patent No. 18,884.

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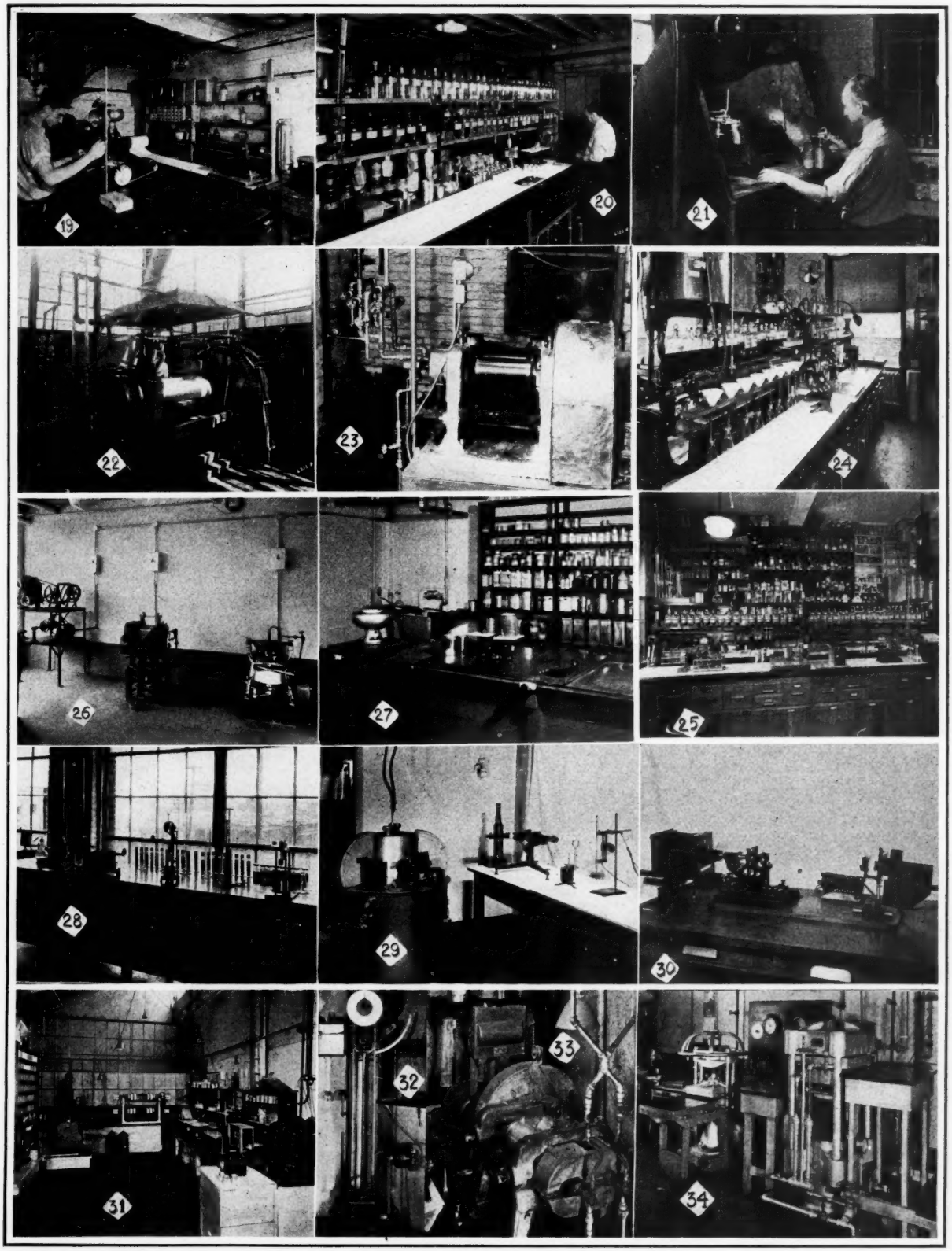

Figs. 19-23. Easton, Pa., Research Laboratory: 19. Miniature Internal Mixer; 20. Chemical Laboratory; 21. Spray Testing Rubber Finishes; 22. Factory-Scale Mixing Tests; 23. Laboratory Mill. Figs. 24-25. New York Research Laboratory. Figs. 26-30. Trenton, N. J., Pigment and Latex Research Laboratory: 26. Paint and Ball Mills; 27. Centrifuge; 28. Stromer Viscometer, Gardner Mobilimeter, Pentrameter, Surface Tension Apparatus, Etc.; 29. X-Ray and Spectroscope for Particle Structure Research; 30. Photomicrographic Equipment for Particle Examination. Figs. 31-34. Long Island City, N. Y., Control Laboratory: 31. Paint Mills, Ball Mills, Flow Tester, MacMichael Viscometer, U. S. Abrasion Tester, Etc.; 32. Scott Tester; 33. Laboratory Mill; 34. Vulcanizers with Booster Tank.

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Uncle Sam Wants to Help

(*Continued from page 29*)

rating is satisfactory, the amount he needs should be advanced without difficulty.

The charges are most reasonable and, like the amount, are arranged between borrower and lender. The maximum charge that may be asked cannot be in excess of the equivalent of a $5 discount per $100 of the face amount of a one-year note to be repaid in equal monthly installments. It may be for as long a term as five years, also to be determined between applicant and bank.

The funds involved in modernization credit are all private monies. The government lends no money. The Federal Housing Administration enters the financial picture through the insurance it grants a financial institution making a loan under the Modernization Credit Plan. The lender is insured by this agency against loss up to 20% of the entire amount of funds advanced as modernization credit.

There is no set plan of modernization. Each plant, store, and warehouse has its individual requirements. However one of the usual needs has been for exterior and interior paint, which is, of course, eligible. Heating, plumbing, air conditioning, sprinkling systems, elevators, as well as electric systems, have been installed under many credit extensions.

One of the most important needs of a factory is adequate lighting arrangements. A poorly lighted plant, as every operator knows, impedes the efficiency of employes and may cause accidents. High rental costs require that working rooms be well lighted from all angles so that space may be economized. Obsolete wiring may be dangerous. Statistics show that during 1934 the improper use of artificial light caused an accident every forty-six seconds and a fatal accident every hour.

Alterations, repairs, and structural changes may be made in the building, and the purchase and installation of certain types of equipment and machinery are permitted—among them: steam platen presses, rubber goods trimmers, hydraulic presses, plasticators, mixers, tubing machines, cutters, hose lead encasing presses, tire molds, abraders, slitters, and other labor and time saving devices for special use in establishments concerned in the rubber trade.

Any approved institution can usually pass on eligibility with little delay. Should it not be able to do so, a letter to the Federal Housing Administration at Washington, stating the problem in full, will furnish the rubber goods man with a specific ruling. Not only is modernization credit one of the most helpful finance plans ever made available, but it is one of the cheapest forms of installment credit yet devised.

The user of this credit can get cash discounts which sometimes equal its cost; while the small monthly installments over a period of years may be met out of income. In many cases the improvements may be made to pay for themselves while at no time during the term of the extension should there be an unusually heavy payment to be met.

In modernizing his plant the operator is maintaining property values, and its more efficient operation will tend to increase his income.

Through modernization the operator is aiding the purposes of the National Housing Act which is "designed to thaw out frozen credit, to stimulate better living conditions for American people, to reduce unemployment, and to begin again the creation of tangible, useful wealth in a form for which there is a great need. This Act encourages the use of private money to recondition, preserve and renew the nation's buildings."

Modernization credit under the terms of the National Housing Act ends April 1, 1936.

South African Tire Trade

A sharp decline in South Africa's imports of rubber tires and tubes has been reported by the trade commissioner in Johannesburg. During the first quarter of 1935 imports of tires and tubes totaled only 2,387,787 pounds, value £116,663, against 4,147,057 pounds, value £180,635, in the corresponding period of 1934 and 2,045,636 pounds, value £106,231, in the first three months of 1933.

Dunlop Rubber Co., Ltd., Ft. Dunlop, Birmingham, England, recently completed a factory at Durban, which is well constructed and fully equipped to manufacture tires. It is understood that several hundred tires have already been produced by the local plant and are being subjected to the usual tests before stocks are released for sale.

In the past whenever a large tire-producing company has opened a branch tire plant in a country importing considerable quantities of automobile tires, imports of tires have always substantially declined. It would appear, therefore, that the decline of approximately 45% in the quantity of tires and tubes imported by the Union of South Africa in the first quarter of 1935 compared with the similar period of last year might indicate the trend of such imports in the future.

Retreading Patents

Joseph Rossman, Ph.D.

THE following abstracts of United States patents for third circle retreading, full circle retreading vulcanizers, recapping vulcanizers, and special retread molds conclude the informative article from our July issue. In a forthcoming issue will begin a review of United States patents on tire repair cores.

131. Hudson, 1,836,850, Dec. 15, 1931. A retread vulcanizer comprises a fixed annular jacketed member formed with a cavity for tires to be treaded, a member mounted to swing toward and from the cavity and carrying an annular jacketed vulcanizer member movable axially into the cavity when the vulcanizer member is swung into line with the fixed jacketed member, one half of a circumferentially split tread molding ring supported in the cavity, the other half of the ring being carried by the swinging vulcanizer member.

132. Cartier, 1,837,356, Dec. 22, 1931. A repair vulcanizer comprises a pair of segmental mold plates, a fixed member having a recess adapted to be formed into a chamber by one of the mold plates, a rigid stud projecting from the fixed member, a movable member slidably supported on the stud adapted to carry the other mold plate, and a cam member mounted on the free end of the stud adapted to advance the movable member and the mold plate carried thereby into closed relation with the fixed member and its mold plate.

133. Heintz, 1,839,877, Jan. 5, 1932. A tire repair device has an exterior heated mold, an expansible core within the tire, between these a flexible pad containing electrical wiring, and a fusible link in the electric circuit and positioned adjacent the inner surface of the tire.

134. Heintz, 1,844,505, Feb. 9, 1932. The vulcanizer has an electric heating pad of such shape as to cooperate with the part of the tire to be vulcanized, a bulb containing an expansible material sensitive to temperature changes and arranged within the repair so as to be acted upon by the heating pad, a pressure responsive circuit breaker outside the repair and connected with the bulb and arranged to open and close the electric circuit to the electric heating pad as the temperature varies, thereby maintaining constant the temperature of the pad.

135. Grange, 1,849,229, Mar. 15, 1932. A bead plate for use with a vulcanizer includes a side element adapted to engage the exterior of the casing adjacent the bead, a top element adapted to apply pressure to the casing, the elements being separable, means for securing them together, and heat insulating means between them.

136. Jones, Jr., 1,852,886, Apr. 5, 1932. A tire retreading mold has a tread engaging portion of high heat conductivity, and asbestos for engaging the sidewalls of the tire, combined with a fluid cooling means passing through the asbestos to carry off the residual heat.

137. Sprowls, 1,853,324, Apr. 12, 1932. A vulcanizing apparatus comprises a molding shell, a heater associated conductively with a portion of the shell, a head means for securing the head to the shell, means for compressing a portion of a pneumatic tire casing within the shell, and means associated with the aforementioned means for securing head and shell to the heater.

138. Woock, 1,866,832, July 12, 1932. A tire repair mold comprises rigid transversely spaced side plates, a segmental flexible tire supporting strip disposed therebetween and curved from end to end, and means connecting the strip to the plates to alter the straight line distance between the ends of the strip, whereby to alter correspondingly the radius of curvature of the strip.

139. Heintz, 1,875,727, Sept. 6, 1932. An adjustable cavity vulcanizer is made of a mold having side and base walls, the base wall formed on a straight line, and a removable and replaceable side reducing plate with side walls corresponding to the contour of those of the mold and having its outer end resting on the straight-line bottom wall of the mold.

140. Thorsen, 1,876,100, Sept. 6, 1932. A tire vulcanizing machine comprises a body member with a tire receiving recess therein, a heating chamber in the wall of the recess, a movable mold section arranged to extend into the recess, and means for bodily, movably, and hingedly supporting the mold section on the body member, the supporting means comprising a hinge link pivotally mounted on the body member, and a hinge element on the mold section pivotally attached to the link; the pivots of the link and hinge element are adjustable to center the movable mold section relatively to the body member.

141. Heintz, 1,877,175, Sept. 13, 1932. A tire repair device comprises a full circular seat for the bead portions of the tire, a sectional cavity vulcanizer to receive a portion of the tire, an annular tube within the latter, and expansible yokes adjustably secured to the ends of the vulcanizer to form extensions on its opposite ends.

142. Grange, 1,879,194, Sept. 27, 1932. A tire vulcanizer includes a cylindrical member for embracing a tire and means for heating the member including a flexible heating element about the periphery of the cylindrical member and a tensioning band about the element for drawing it into intimate contact with the outer periphery of the cylindrical member.

143. Brown, 1,880,407, Oct. 4, 1932. Tire repair apparatus consists of an open supporting frame, a heater unit mounted thereupon, and a series of hollow segmental cores adapted to conform to the internal contours of various sizes of tires; the cores have local internal supporting seats of the same size, whereby the cores may be interchangeably mounted over the heater unit and upon the support.

144. Browne, 1,903,025, Mar. 28, 1933. A vulcanizer has separate tread and side pressure plates with yielding pressure faces, which have pockets with adjacent marginal portions open, and a separable flexible heating pad for placement within each pocket or in adjacent ones.

145. Thorsen, 1,903,538, Apr. 11, 1933. A vulcanizer machine contains a heated stationary body having a cavity therein, a movable mold plate operatively related to the cavity, and a matrix and a tread design die member secured into the cavity and to the plate; a pair of plates one on each side of the tire casing has angular

overlapping portions to form dies for the beads and to form an adjustable supporting rim for the casing.

146. Grange, 1,905,463, Apr. 25, 1933. A tire repair vulcanizing mold comprises a central arcuate bottom member and side members movable toward and from the side edges of the central member to provide a tire receiving trough adjustable as to width, means for securing the side members to the central member to prevent spreading of the side members from an adjusted position, and means for simultaneously adjusting the side members toward and from the central member.

147. Daniel, 1,906,950, May 2, 1933. A vulcanizer comprises a stand having interiorly a narrow water space with a heat conducting wall for transferring heat to an article engaging the wall exteriorly of the stand, and a tubular chamber adapted to contain a heating element and communicating with the water space by a restricted passage.

148. Woock, 1,907,026, May 2, 1933. That method of fitting a tire to an adjustable tire mold consists in the steps of first determining the actual outside peripheral measurement of the tire, placing it into the mold, and then adjusting the mold so that the interior peripheral measurement thereof is the same as that determined as the actual outside peripheral measurement of the tire, whereby when the tire is inflated under pressure within the mold, it will be incapable of stretching or buckling.

149. Woock, 1,913,739, June 13, 1933. An adjustable tire engaging rim comprising a rim band has a slot cut therethrough and extending transversely from one side thereof, a bead engaging flange slidably mounted on the band, and a lug on the flange with a sliding fit in the slot.

150. Woock, Peterson, and Caufield, 1,914,474, June 20, 1933. A full circle vulcanizing mold for retreading tires comprises matching mold sections to receive the tread portion of the tire, the oppositely disposed inner edges of the mold sections being adapted to extend to approximately the median line of the tire walls, an adjustable base to support and retain the tire beads whereby the bead portions may be adjusted axially of the tire to cause the tread portion properly to fit the mold sections, means to apply pressure against the internal walls of the tire, and independent pressure rings movable axially of the tire to engage the sidewalls thereof between the base and mold sections and operable to press against such sidewalls to press the tread firmly against the interior surfaces of the mold sections.

151. Grange, 1,914,853, June 20, 1933. A tire vulcanizer has a mold member with an inner surface shaped to the contour of the tread portion of the tire and an outer peripheral face transversely flat opposite the surface, an electrical heating element of flexible sheet-like form arranged against the face, and pressing means comprising a pressure plate of longitudinally curved and transversely flat formation for pressing the heating element into intimate contact with the outer peripheral face by engagement over substantially the entire area of the heating element flexing it into intimate contact with the face.

152. Gay, 1,917,110, July 4, 1933. A full circle retreader for tire casings comprises an external covering containing a tread mold and adapted to extend completely around and cover entirely the periphery of the casing, heating means within the substance of the cured rubber cover extending across and around the mold, and means for expanding the tire casing within the cover to force the gum tread into the mold.

153. Hawkinson, 1,917,261, July 11, 1933. The method of recapping tire casings comprises applying tread material to the crown of the casing, laterally spreading the sidewalls of the casing at circumferentially spaced points to contract circumferentially the crown portion of the casing, placing it within a surrounding matrix having an internal diameter less than the normal diameter of the casing, diametrically expanding the casing against the surrounding matrix, and heating the latter to cure the applied crown tread material on to the crown of the casing.

154. Hawkinson, 1,917,262, July 11, 1933. A tire recapping device consists of an integral cylinder-like mold with continuous tread material confining portions projecting inwardly from marginal portions of the mold, the portions being of such construction and extent as to make circumferential sealing contact with the shoulders only of a tire to support the mold over the tire crown and leave the sidewall portions thereof exposed, means to vent the mold between the tread confining portions thereof, and heating means extending circumferentially of the mold between its marginal portions.

155. Lewis and Waugh, 1,923,736, Aug. 22, 1933. A vulcanizer has a mold for receiving a pneumatic tire, a pad with an electric conductor disposed about the inner surface of the mold for engaging the outer surface of the tire, an inflatable airbag having an electric conductor embedded in its walls and adapted to engage the inner surface of the tire, and means for electrically energizing all the conductors for simultaneously applying vulcanizing heat to the tire's inner and outer surfaces.

156. Cassley and Brundage, 1,925,993, Sept. 5, 1933. A tire repair vulcanizer comprises a jacketed base member and jacketed wall members, one of these being movable over the base member toward and from the other wall member, means comprising a rod for moving the movable wall member, a chambered bracket for supporting a rod shiftable axially in the bracket, the base having a duct connected to the bracket, and a slidable connection extending parallel to the rod between the movable wall member and the bracket for supplying a heating fluid from the base member to the movable wall member in all positions of adjustment of the member.

157. Woock, Peterson, and Caufield, 1,928,404, Sept. 26, 1933. To fit a tire of a certain tread diameter into a full circle retreading vulcanizing mold of a different tread diameter move the bead portions of the tire axially and in opposite directions to vary the tread diameter of the tire until it equals that of the mold and then confine the bead portions of the tire against further movement.

158. Browne, 1,932,302, Oct. 24, 1933. A vulcanizer has a stand comprising a pedestal adjustably carrying a tire mounting, means whereby tires of different sizes may be secured to the mounting with the tire arranged outwardly of it, vulcanizing means engaging the outer walls of the tire, wrappings securing the vulcanizing means to the tire and extending through the mounting, adjustable means carried by the mounting to engage the wrappings, and a sectional vulcanizing core in the tire and supported by the mounting.

159. O'Brien, 1,938,437, Dec. 5, 1933. A collapsible pressure ring has a plurality of segments hingedly connected, two of the segments having free ends for interengagement to hold the various segments together in the form of an annulus, one of the free ends having spaced arcuate plates secured to its concave face, the plates forming a groove between them, the other free end also having spaced arcuate plates and a tongue between them adapted for entry into the groove in the other free

(*Continued on page* 47)

The Foreman's Job

Evaluating Foremanship Responsibilities

G. F. Buxton[1]

IN THE attempt to determine relative values of the different things a foreman must do, we are face to face with many varied approaches. We may consider his job as pointing in any one of several different directions. We may think of his work as principally that of supervision. As a supervisor, he is watching expertly everything that occurs in his department, and everything that he does himself supports this observing, inspecting, examining type of responsibility.

Or, we may think of the foreman as primarily in charge of a working force of employes, with most of his time given to directing the activities of these employes. In this case everything else is seen as secondary to that of keeping men profitably employed. All other responsibilities center around and serve the human responsibilities of the foreman.

Or, again, we may think of the foreman as charged with the job of getting out production, of meeting production schedules, of chasing stock, of keeping check on production speed, and of making deliveries on time. He either meets or he fails to meet his quota. His measure of success is determined by his ability to be "up to schedule."

Previous Discussions

We find a number of different ways of establishing a basis for evaluating the foreman's job. In this, the last of this series of articles on the foreman's job, we will first recall a number of different elements of foremanship which we have been discussing in recent numbers of INDIA RUBBER WORLD.

In the March, 1935, issue we noted that foremen are supervisors, instructors, and leaders of men; that they are trouble shooters, maintenance men, inspectors, safety men, and watchmen to an extent. We analyzed briefly a foreman's routine duties and the desirable qualifications for his job.

In the April issue we emphasized the foreman's part in the control of production costs and quality. In the May and June issues we pointed out the importance of cooperating with the management (loyalty), with other foremen and department heads (tact), and with employes (leadership). In the July issue we called attention to the teaching responsibility of the foreman; and in the August issue we mentioned several ways he uses to get and hold the worker's interest.

The Foreman's Four Responsibilities

Now we wish to examine, from a somewhat different angle, four rather distinct phases of foremanship. A foreman spends a part of his time in each of the four following activities:

The first, classed as paper or desk work, is concerned with such items as checking shop orders, making plans for new work, and reporting on completed work.

The second may be classed as personnel work, or that concerned with training and supervising employes and getting their interest and continued effort at their work.

The third may be classed as tool and shop maintenance work, or that concerned with keeping the shop and its equipment in the best condition at all times, with everything properly cleaned, adjusted, and kept in order.

The fourth may be classed as production responsibility, or that concerned with keeping up a steady flow of production and requiring stock chasing, inspection, and delivery of finished work to the next department.

Each of these four responsibilities demands a part of the foreman's time and attention, and each one laps over the others to an extent. As "paper work," a foreman may be checking payrolls, product quotas, scrap results, salvage, production costs, new drawings or specifications, requisitions, or other data closely related to the "man," "maintenance," or "production" responsibilities. And yet we will not find it difficult to classify such activities as "paper work."

Under "personnel" responsibilities, it is not difficult to recognize those activities essentially concerned with workers. Here are included selecting, breaking-in, and training employes, as well as providing such incentives as will build a good working team and whet the ambition of the more capable individuals. We may also include attention to such details in handling workers as settling disputes and misunderstandings and taking care of injuries and various troubles met by different workers from time to time.

Under "tool and shop maintenance" responsibilities are the need of attention to the lubrication of machinery and the sharpening of cutters, the setting-up and testing of set-ups for new shop jobs, the making of improvements in such set-ups wherever possible, and the preservation of effective storage and conveyer conditions. A foreman may also find opportunity for bettering the general condition of the shop itself as to light, temperature, or ventilation. He should, at least, keep it from getting any worse.

Under "production" responsibilities appear the practice of making sure that raw stock and partially processed parts are in the department ready for use when needed, and the habit of keeping a constant watch over the quality of work being produced and of checking the actual production quantity against the assigned quota or the expected amount for the day.

Foremen in a large number of factories have been asked to evaluate these four types of foremanship responsibility. Almost invariably they arrange them as follows:

1. Personnel responsibilities take the most time.
2. Production responsibilities come next in order.
3. Tool and shop maintenance occupy third place.
4. Paper work, while important, takes the least time.

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The choice depends, of course, on the department, but the above selection seems to be most common for the usual production department. Some foremen, where there are short runs, must spend a large amount of time on (3) the "tool" side of the job, making and checking new set-ups. Other foremen consider themselves mostly as (2) inspectors of the product; while a warehousing or shipping room foreman may spend most of his time on (4) paper work, checking stock and shipping orders.

Checking List

A more complete foremanship checking list than the above four-fold classification is given below. The foreman is asked to examine this list of forty items with an attempt to determine which are more important and which less important—which take the most of his time and which take the least. He will probably find that a few of the items (not over five) represent a very large responsibility. These may be marked "A" at the left of the items selected. He will probably find that a considerable number (at least twenty) seem to have a medium amount of importance and take a fairly large amount of his time. These may be marked "B" at the left of the various items. He will probably find that several (ten or so) seem to have but a small responsibility for him, shared perhaps with someone else, or take but little of the foreman's time. These may be marked "C" at the left. He will probably find that a few (five or so) have no responsibility for him although they may be closely related to his own work and may be very important for someone else. The list follows:

Planning Ahead

1. Planning for immediate departmental requirements.
   Adjustments that should not be postponed.
2. Planning for the next job and for tomorrow's jobs.
   New tools, drawings, materials, or employes.
3. Planning for future production—a month ahead.
   Changes to recommend as production changes.

Improving Conditions

4. Devising better tooling scheme for the department.
   Planning rearrangements and major changes.
5. Cutting out any unnecessary production operations.
   Promoting economy and safety wherever possible.
6. Simplifying slow and difficult operation motions.
   Improving the way of handling standard jobs.
7. Suggesting product changes for easier production.
   Being on the watch for more practical features.

Checking Production

8. Checking shop orders, drawings, and specifications.
   Understanding plans and correcting mistakes.
9. Checking stock, stores, and product just completed.
   Keeping in close touch with such matters.
10. Making various records and departmental reports.
    Keeping up-to-date in turning in all office data.

Watching Costs

11. Estimating scrap losses and looking for causes.
    Making constant effort to reduce shop wastes.
12. Determining number and kinds of workers needed.
    Controlling labor costs per unit of production.
13. Taking steps to eliminate unnecessary employes.
    Planning ahead so as to avoid difficulties.
14. Finding ways of lowering direct and indirect costs.
    Recognizing responsibility for shop economies.

Training and Morale

15. Breaking in new shop employes for standard operations.
    Giving workers a good start in the department.
16. Improving the efficiency of many older employes.
    Realizing that there is always a training problem.
17. Building a good working team in the department.
    Getting all the employes to work together agreeably.
18. Striving to grasp and carry out the ideas of management.
    Making an effort to fit into the company's plans.
19. Getting the worker's interest in the company's problems.
    Selling the employe to his job in every way.
20. Providing various non-pay incentives to get interest.
    Keeping in mind the need of improving shop morale.
21. Advising certain employes as to possible advancement.
    Watching for unusual abilities to encourage.
22. Taking quick temporary care of personal injury cases.
    Feeling responsibility for preventing further trouble.
23. Settling grievances, grouches, and misunderstandings.
    Changing undesirable attitudes at the early stages.

Production Routine

24. Seeing that machines and tools are in good condition.
    Keeping equipment in proper adjustment at all times.
25. Seeing that the entire shop is in good order for work.
    Keeping the shop clean and things where they belong.
26. Checking new set-ups for changed production operations.
    Taking responsibility for starting jobs correctly.
27. Experimenting upon new tools and new shop processes.
    Looking for better ways of performing operations.
28. Preserving and improving the material handling scheme.
    Providing effective storage and conveying facilities.
29. Constantly watching the general movement of production.
    Shooting troubles and keeping a smooth flow of work.
30. Inspecting raw stock and partially processed parts.
    Recognizing the importance of controlling quality.
31. Inspecting work in process and finished pieces of work.
    Keeping departmental production up to standard.

Cooperation

32. Cooperating with those responsible for a safety program.
    Carrying out the company's ideas on safety and health.
33. Working agreeably at all times with heads of departments.
    Conferring with associates for intelligent efforts.

Keeping Informed

34. Studying new ideas on lighting and air conditioning.
    Knowing how to control power, heat, moisture, vibration.
35. Studying new tools, machines, materials, and processes.
    Reading magazines, catalogs, and other publications.
36. Studying improved production methods from other plants.
    Talking with other foremen or visiting their departments.
37. Studying costs, factory finances, and industrial economics.
    Learning phases of practical economics needed by foremen.
38. Studying human nature—the problem of handling employes.
    Knowing people in general and the employes in particular.
39. Studying individual efficiency problems—self analysis.
    Finding ways of improving one's own ability to do things.
40. Studying general foremanship and shop management methods.
    Keeping informed as to ways of handling a foreman's job.

and Finally—

After the foreman has marked these items as indicated, with the A, B, C, and D classification, it may prove interesting to go over the list again and see if the "A" classification actually represents those items taking the largest part of his time, or whether his choices represent the items which he feels should take the most time and attention. It may be that grading the forty items will suggest a way of making the reader's own foremanship still more effective than it has been in the past.

Artificial Rubber Latex

In a patented process[1] an aqueous dispersion of crude rubber is produced by diffusing by agitation a definite proportion of oleic acid throughout the mass of a benzol solution of rubber. Ammonia water is then added and mixed thoroughly with the rubber solution. The diffused particles of oleic acid are saponified by the ammonia forming a dispersing agent within the mix, thus stabilizing the final dispersion which is a milky-white mass and may be diluted practically to any extent with water. It may be used as prepared, or the solvent be removed by evaporation. The dispersed rubber may be easily coagulated by the common materials employed for coagulating crude rubber. The coagulated rubber has the characteristics to the rubber prior to its dispersion. It may be vulcanized with the same sulphur factor and heat coefficient as the original rubber. Such aqueous dispersions are applicable in the manufacture of all kinds of felted fabrics, as, for example, in the production of felt for hat bodies, shoe stiffeners, slippers, etc., or in the manufacture of paper, cardboard, boxboard, sheathing or roofing paper, or felt and leather board. Other applications suggested for aqueous dispersions of the sort indicated are as shoe pastes, leather dressings, floor and furniture polishes, or for waxing threads or cords, or for sizing various materials.

[1] U. S. patent No. 1,833,038.

How International Rubber Restriction Came About[1]

Everett G. Holt

THE existing Intergovernment Agreement on rubber, arrived at in April and May of 1934, is based on more experimentation and a wider actual experience than any commodity control scheme previously tried. In its broadest aspect it may be looked upon as providing a test case for the efficacy of such control. Or a test case of a sort for the triumph of human fairness, moderation, and good faith over incitements to greed, injustice, and venality.

In 1910, a turning point in the story of rubber, plantation rubber was as yet in its infancy. In 1876 some seeds of *Hevea brasiliensis*, the source of Pará rubber, had been carried from northern Brazil to London, germinated there, and afterward transplanted to Ceylon. Thence some were taken later to Malaya, and thus without ostentation cultivated rubber began to spread eastward from Ceylon to every neighboring tropical land. Since rubber requires

[1] Reprinted from *Asia*, June, 1935, pp. 327-31.

U. S. Rubber Products, Inc.

By Grafting a Bud from a Perfect High-yielding Tree into the Wood of a Young Sapling, It Is Possible to Increase the Normal Yield of Four Pounds a Year to as Much as Twenty Pounds

seven years to come into bearing, planting was cautious, and the number of estates increased rather slowly. The first rubber plantation company was organized in 1903, and in 1910, when the price of rubber reached its all-time peak of $3 a pound, the output of plantation rubber in the East was still only a small fraction of the total wild rubber gathered for the world market by native collectors, chiefly in the Amazon valley in the Brazilian state of Pará and to a smaller extent in Africa.

In 1910, as a result of the Brazilian attempt at rubber valorization, or artificial control of price, when mass production of automobiles was starting in the United States, new plantation companies were organized with frenzied speed. There was a terrific boom in rubber shares in London, based on dreams of huge profits to be made after seven years, and the soaring prices found many Hollanders as well as the Britishers in a receptive mood. The first rubber plantations had been laid out in Netherlands India later than in Ceylon and Malaya and largely at the expense of tobacco and coffee production. But in 1909-1910 stories of the profits made by the few Dutch planters who had rubber in bearing by that time were retold in Amsterdam and The Hague and sent another group of pioneers hurrying eastward.

Between 1905, when the first shipments of plantation rubber reached London from the East, and 1910, the total area planted in Middle Asia had bounded from 150,000 acres to 1,450,000 acres, and, as a result of continued high prices, especially during the World War, the latter figure had trebled by 1922. Meanwhile the output of wild rubber fell from 73,000 tons in 1910, more than 90% of the total production, to less than 28,000 tons, and the output of plantation rubber increased from about 7,000 tons in 1910 to more than 375,000 tons. Almost $^{3}/_{10}$ of the plantation rubber in 1922 came from the Dutch colonies of Java, Sumatra, and Borneo, and $^{7}/_{10}$ from the British colonies and protectorates of Ceylon and Malaya. The non-British capital invested—about 25%—was chiefly Dutch, but was not exclusively European. For, in British and still more in Dutch territories, Chinese and Malays had become convinced of the superiority of estate to forest rubber and were developing small gardens worked by native labor familiar with estate methods. Thus in the short space of twelve years had come the triumph of Middle Asia over tropical America in producing *Hevea brasiliensis*, of cultivated over wild rubber, and there was now in progress another and less happy triumph—that of supply over demand.

For the postwar depression, which synchronized with the maturing of the trees in the vast plantation acreage, and the change from short-lived fabric tires to longer-lived cord tires, brought about increased supply together with decreased demand and so reversed the price trend. Until late in 1919 the price was above 50¢; in July, 1921, it touched 11.5¢, at the low. Rubber stocks in the world early in 1922 were estimated as more than 300,000 tons, a year's supply, and potential rubber production seemed well in excess of probable world consumption. Hence the industry resolved to try coöperative control.

It was natural that the British, with the largest stake in the game, should act first. On the demise of a partially successful attempt in 1920-1921 at a voluntary 25% restriction by British, Dutch, and a few Chinese producers, the British Rubber Growers Association, in October, 1921, convinced Parliament of the necessity of inquiring into the state of the rubber industry. Accordingly, a committee of practical rubber men was appointed under the chairmanship of Sir James Stevenson, who was not connected with rubber, but was well known as the head of the potent organization making Johnny Walker whiskey.

Unable to secure the adherence of the Dutch to a scheme applying to both British and Dutch territory, the committee suggested, in October, 1922, two possible schemes for British territory—the first, a restriction of output, and the second, which was Stevenson's personal proposal, a restriction of exports by duties (scaled very high and fixed for quarterly periods according to the price of rubber) on shipments in excess of the percentage of standard production allowable at the minimum tax rate. This second scheme, which the committee preferred, was approved, and in less than a month the legislation for adopting and enforcing it had been rushed through in Ceylon, the Federated Malay States, and the Straits Settlements.

The Stevenson Restriction Scheme was put into effect on November 1, 1922, and for two years it seemed to be satisfactory. Prices soon allowed producers to make a good profit, and by the end of 1924 stocks were much reduced. Balloon tires as well as speculative trading aided in the seemingly beneficial depletion. At the time, however, there was a tendency to think of stocks in terms of absolute quantity instead of months' supply, and in late 1924 a shortage began. The result was a panic market. The price shot to a high of $1.21 by July, 1925, and continued, despite violent fluctuations, at a very high average until the middle of 1926. An attempt, successful for another year and a half, was then made to peg the price at 1s.9d. (42¢) instead of 1s.3d., the original objective of the Stevenson scheme.

The Stevenson Restriction Scheme ceased to exist on November 1, 1928. In retrospect it looks almost like a stimulation scheme; for the high prices that it brought about induced heavy planting in restricted countries and still heavier planting in non-restricted countries, especially Netherlands India, where innumerable native producers turned from other crops to rubber. Native production in Netherlands India jumped from 17,000 tons in 1922 to 108,000 tons in 1929. Total exports of estate and native rubber nearly trebled during the same period. Rubber production became well established in Siam, British Borneo, and Indo-China. The Ford plantations in Brazil, the Goodyear plantations in the Philippines, and the Firestone estates in Liberia signified one type of American reaction; the trebled output of reclaimed rubber, another.

World exports of rubber rose from less than 400,000 tons in 1922 to 861,000 tons in 1929. In mid-1929 the principal known rubber stocks aggregated 300,000 tons; since production steadily exceeded consumption, stocks rose to nearly 490,000 tons at the end of 1930 and about 620,000 tons at the end of 1931. The weight of these supplies, mostly accumulated in the United States, depressed prices from about 16¢ a pound in December, 1929, to 9¢ at the end of 1930 and 4⅔¢ a year later. During 1932, at the lowest level of the world depression, rubber stocks remained practically stable, but the American holdings increased by 55,000 tons. The price fluctuated, but continued to fall, and in the first quarter of 1933 it averaged almost exactly 3¢.

Doubtless the American trade expected price to affect production sooner than it did. As a matter of fact, the European producers all tried at first to meet the situation by operating at or near capacity, so as to reduce production costs. But during 1931 many producers were sustaining such losses that some of them, particularly in British India, closed down their estates, and others tapped only areas where costs would be at their lowest.

G. A. Van Bovenl

A Skillful Tapper Takes Care That He Cuts No Deeper Than the Bark, Lest He Hurt the Tree. The Milky Latex, Oozing from the Incision, Collects in a Cup Fastened Below the Cut

Also producers tried new and less expensive tapping systems, cut plantation staffs to the bone in number, as well as in salaries and wages, and practiced every other possible economy. During the period 1927-1933 a representative group of eighty-five Malayan estates managed to reduce production costs, as reckoned in British pence, from 10.30 to 2.46; while at the same time the average price realized was falling from 18.10 to 2.90. It is frequently stated that 1932-1933 low costs would have been impossible except for the low price of rice, the staple diet of estate labor. At any rate, an increasing number of the Malayan estates, aided materially of course by British abandonment of the gold standard in September, 1931, found themselves able to make ends meet.

France solved the problem of low prices for planters in Indo-China by subsidizing rubber production there with the proceeds of a special tax on rubber imported into France. Since France customarily has imported more than three times the quantity of rubber produced in Indo-China, a relatively low tax on imports was sufficient. This situation, which has no parallel elsewhere, placed France, as will appear later, in a strong bargaining position when a new scheme for control of rubber was being discussed.

As prices continued to fall, native rubber growers pursued courses quite unlike the procedure of estates. In the Outer Possessions of Netherlands India native production declined much sooner and much more sharply than in Malaya, where natives are largely dependent on rubber for a livelihood. No other producers respond to price conditions so sensitively as do the Netherlands Indian natives. On a declining price movement the market is at a standstill. With rising prices the turnover of stocks is very rapid. In regions where the natives are not chiefly dependent on rubber they quit tapping their trees when prices are unattractive. Then, too, the system whereby a tapper takes his pay from an owner in kind lends itself to a quick reaction to market prices. During 1932 and early 1933 only family tapping was carried on by the Netherlands Indian natives, but, with the rise in prices before the existing intergovernment restriction agreement became effective, production rapidly increased. To not a few observers in late 1933 and early 1934 it seemed that in the absence of restrictive measures the rubber production industry would inevitably fall more and more under native control. The total exports of native rubber from Netherlands India in 1932 were less than 61,000 tons, or slightly more than 5,000 a month; during March, April, May, and June (the last-named month restricted) of 1934 they averaged more than 20,000 tons a month.

(To be concluded)

Porous Rubber Balls

In manufacturing porous rubber balls the rubber is submitted to prevulcanization under high pressure in the presence of a gas in a mold. It is withdrawn from that mold, and curing is completed in another one. When the article is of large size, gas does not penetrate to the core of the mass, and irregular curing results. A remedy for this is effected by supplying the rubber, by means of needles, with air channels into which a thread of talced wool may be passed to prevent their becoming stopped up.

Compounding Ingredients[1]

Compositions—Properties—Functions

CARBON BLACK of two types are used in rubber compounding. They are channel black, used for its effect in reenforcing the tensile properties of vulcanized rubber, and the softer carbon produced by cracking natural gas at high temperatures out of contact with air. This form of carbon has much lower reenforcing value in rubber but excels for compounding it for pliability and resistance to flexing.

The extensive use of carbon black in rubber began in 1914 with its use in tire treads to improve their wearing quality. Its superiority for that purpose was fortunate and a timely development because the munitions demand of the time seriously limited the supply of zinc oxide for other uses. Now zinc oxide functions in rubber work principally as a universal activator for organic accelerators and as a white pigment.

Carbon Blacks

Aerfloted Arrow Specification Black

CHEMICAL COMPOSITION. Channel gas carbon.
SELLER. J. M. Huber, Inc.
APPLICATIONS. Tire treads, footwear, mechanicals, molded articles, heels, soles, insulation, and extruded products.
PHYSICAL STATE. Soft texture carbon, 99.9% through 325-mesh screen. Semi-compressed or fully compressed.
PROPERTIES. Sp. gr., 1.78. Stable. Non-toxic.
PURPOSE AND FUNCTION. Hardness. Blackness. Abrasive resistance. Resilience. Tensile reenforcement.
METHODS OF USE. Add directly to milled rubber or in masterbatch form.
VULCANIZATION. Retards cure slightly.
PATENTS. Not disclosed.

Arrow Compact

CHEMICAL COMPOSITION. Carbon.
SELLER. J. M. Huber, Inc.
APPLICATIONS. Tire treads, footwear, mechanicals, molded articles heels, soles, insulation, and extruded products.
PHYSICAL STATE. Granulized pellets.
PROPERTIES. Sp. gr., 1.78. Stable. Insoluble. Non-toxic.
PURPOSE AND FUNCTION. Hardness, Abrasive resistance. Tensile reenforcement.
METHODS OF USE. Mill directly into the rubber or add as master batch.
VULCANIZATION. Retards cure slightly.
PATENTS. Not disclosed.

Certified Spheron

CHEMICAL COMPOSITION. Pure channel process carbon black.
SELLER. Godfrey L. Cabot, Inc.
APPLICATIONS. Footwear, belting, packing, hose, heels, soles, insulation, etc.
PHYSICAL STATE. Dense dustless granules, or flocculent powder, compressed or uncompressed, in bags, cartons, or cases.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Hardness. Color. Tensile reenforcement. Chief functions to increase resistance to abrasion, tear, and action of oils.
METHODS OF USE. Direct dispersion into rubber in Banbury or open mill.
VULCANIZATION. Retards cure when organic accelerators are used. Has little effect on inorganic accelerators.
PATENTS. U. S. No. 1,957,314, May 1, 1934. Canadian No. 33,741, July 4, 1933.

Disperse

CHEMICAL COMPOSITION. Carbon black.
SELLER. Wishnick-Tumpeer, Inc.
APPLICATIONS. Tire treads, beads, footwear, mechanicals, heels, soles, insulation, extruded products, druggists' sundries, etc.
PHYSICAL STATE. Powder and pellets passing 99.9% through 325-mesh screen.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic. Intensely black.
PURPOSE AND FUNCTION. Hardness. Color. Tensile reenforcement. Finish. Improves resistance to abrasive wear and tearing of rubber compositions.
METHODS OF USE. Add directly to the rubber as powder or master batched. Proportions recommended for master batch are 66% rubber and 34% Disperso.
VULCANIZATION. Disperso is a moderately fast curing black.
PATENTS. Not disclosed.

Dixie

CHEMICAL COMPOSITION. Carbon.
SELLER. United Carbon Co.
APPLICATIONS. All types of rubber products.
PHYSICAL STATE. Extremely fine particles, compressed to facilitate handling.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic. Intensely black.
PURPOSE AND FUNCTION. Abrasive resistance. Color. Resilience. Tensile reenforcement.
METHODS OF USE. Milled into rubber in proportions from 1 to 100% as desired.
VULCANIZATION. Retards cure slightly.
PATENTS. Not disclosed.

Dixiedensed

Same as Kosmobile, *which see.*

Fumonex

CHEMICAL COMPOSITION. Carbon.
SELLER. Binney & Smith Co.
APPLICATIONS. Tire carcasses, inner tubes, footwear, mechanicals, molded articles, heels, soles, insulation, extruded products, druggists' sundries, solid tires, etc.
PHYSICAL STATE. Powder. Somewhat larger particle size than that of Micronex.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic. Intensely black.
PURPOSE AND FUNCTION. Firmness with good resilience. Color. Tensile reenforcement. Chemically inert. Valuable in combinations with zinc oxide or carbon black by giving good reenforcement and excellent processing qualities.
METHODS OF USE. Mixed directly with rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed. Fully protected.

Gastex

CHEMICAL COMPOSITION. 99% carbon.
SELLER. General Atlas Carbon Co.
APPLICATIONS. Tire treads, carcasses, inner tubes, footwear, belting, packing, hose, molded articles, heels, soles, insulation, and extruded products.
PHYSICAL STATE. Passes completely through 325-mesh screen. Particle size larger than channel black.
PROPERTIES. Sp. gr., 1.75. Soft texture, blue-black color.
PURPOSE AND FUNCTION. Tensile reenforcement. Abrasive resistance. Resilience. Finish.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. Fast curing—reduce accelerator.

[1] Continued from INDIA RUBBER WORLD, Aug. 1, 1935, pp. 29-31, 41

PATENTS. U. S. Nos. 1,902,753, 1,902,797, 1,904,469, 1,930,437, and 1,999,541.

Kosmobile

CHEMICAL COMPOSITION. Carbon.
SELLER. United Carbon Co.
APPLICATIONS. All types of rubber products.
PHYSICAL STATE. Extremely fine particles mechanically agglomerated into spherical pellets about 1/64-inch in diameter to eliminate dust in handling.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic. Intensely black.
PURPOSE AND FUNCTION. Hardness. Abrasive resistance. Color. Resilience. Tensile strength of rubber compositions.
METHODS OF USE. Milled into rubber in proportions from 1 to 100% as desired.
VULCANIZATION. Slight retardation of cure.
PATENTS. Not disclosed.

Kosmos

Same as Dixie, *which see.*

Micronex Beads

CHEMICAL COMPOSITION. Carbon.
SELLER. Binney & Smith Co.
APPLICATIONS. Tire treads, carcasses, beads, inner tubes, footwear, hose, molded articles, heels, soles, insulation, extruded products, druggists' sundries, etc.
PHYSICAL STATE. Friable pellets about 1/32-inch or less in diameter which easily break up in mixing to the ultimate particles of carbon black.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic. Intensely black.
PURPOSE AND FUNCTION. Hardness. Color. Resilience. Tensile reenforcement. Increases abrasive resistance of rubber compositions.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. Slight retarding effect common to carbon blacks.
PATENTS. U. S. No. 1,889,429, November 29, 1932.

Micronex Mark II

CHEMICAL COMPOSITION. Carbon.
SELLER. Binney & Smith Co.
APPLICATIONS. Tire treads, carcasses, beads, and inner tubes.
PHYSICAL STATE. Powder similar to Micronex carbon black, but slightly finer in particle size.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic. Intensely black. Great inherent reenforcing properties.
PURPOSE AND FUNCTION. Hardness. Resilience. Tensile reenforcement. Increases abrasive resistance of rubber compositions.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. Designed for acid types of accelerator with adequate amounts of fatty acids.
PATENTS. Not disclosed.

Micronex, Standard

CHEMICAL COMPOSITION. Carbon.
SELLER. Binney & Smith Co.
APPLICATIONS. Tire treads, carcasses, beads, inner tubes, footwear, hose, molded articles, heels, soles, insulation, extruded products, druggists' sundries, etc.
PHYSICAL STATE. Powder. Particle size about 0.06-micron.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic. Intensely black.
PURPOSE AND FUNCTION. Hardness. Color. Tensile reenforcement. Increases abrasive resistance of rubber compositions. Protects against actinic rays. Improves oil resistance.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. Slight retarding effect common to carbon blacks.
PATENTS. Not disclosed.

Micronex W-5

CHEMICAL COMPOSITION. Carbon black.
SELLER. Binney & Smith Co.
APPLICATIONS. Insulation.
PHYSICAL STATE. Similar to Micronex carbon black, Specially adapted for rubber insulating compounds.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic. Intensely black.
PURPOSE AND FUNCTION. When properly compounded it improves electrical break-down, resistivity, and power factor.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. Slight retarding effect common to carbon blacks.
PATENTS. Not disclosed.

Micronex W-6

CHEMICAL COMPOSITION. Carbon.
SELLER. Binney & Smith Co.
APPLICATIONS. Tire treads, carcasses, beads, inner tubes, footwear, mechanicals, hose, molded articles, heels, and soles.
PHYSICAL STATE. Compressed powder, similar to Micronex carbon black.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic. Intensely black.
PURPOSE AND FUNCTION. Hardness. Color. Resilience. Tensile reenforcement. Increases abrasive resistance.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. Slight retarding effect common to carbon blacks.
PATENTS. Not disclosed.

P-33

CHEMICAL COMPOSITION. Soft carbon.
SELLER. R. T. Vanderbilt Co.
APPLICATIONS. Tire carcasses, inner tubes, footwear, mechanicals, molded articles, heels, soles, insulation, extruded products, tire-curing bags, oil-resisting stocks, and hard rubber.
PHYSICAL STATE. Powder of fine particle size.
PROPERTIES. Sp. gr., 1.80. Insoluble. Stable. Non-toxic. Odorless. Black.
PURPOSE AND FUNCTION. Gives high tensile, stretch, tear and abrasive resistance.
METHODS OF USE. Add directly to the rubber in high or low loadings.
VULCANIZATION. Shortens cure.
PATENTS. Not disclosed.

Pelletex

CHEMICAL COMPOSITION. Carbon.
SELLER. General Atlas Carbon Co.
APPLICATIONS. Tire treads, footwear, belting, packing, hose, heels, soles, insulation, etc.
PHYSICAL STATE. Free flowing dustless carbon black of "Gastex" quality.
PROPERTIES. Sp. gr., 1.75. Insoluble. Stable. Odorless. Non-toxic.
PURPOSE AND FUNCTION. Hardness. Color. Tensile reenforcement. Resistance to abrasion, tearing, and action of oils.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. Does not retard cure when organic accelerators are used.
PATENTS. U. S. Trade Mark No. 308,853.

Thermax

CHEMICAL COMPOSITION. Soft carbon.
SELLER. R. T. Vanderbilt Co.
APPLICATIONS. Tire carcasses, inner tubes, footwear, mechanicals, heels, soles, inflated and extruded products, tire-curing bags, oil resisting stocks, and hard rubber.
PHYSICAL STATE. Powder. Fine particle size, but larger than that of P-33.
PROPERTIES. Sp. gr., 1.80. Insoluble. Stable. Non-toxic. Odorless. Dark gray.
PURPOSE AND FUNCTION. Gives good tensile, stretch, tear and abrasive resistance with low modulus.
METHODS OF USE. Add directly to the rubber in high or low loadings.
VULCANIZATION. Shortens cure.
PATENTS. Not disclosed.

Velvetex

CHEMICAL COMPOSITION. Carbon.
SELLER. Binney & Smith Co.
APPLICATIONS. Tire carcasses, footwear, hose, molded articles, heels, soles, insulation, extruded products, auto topping, and spreader goods.
PHYSICAL STATE. Fine soft powder. Larger particle size than Fumonex.
PROPERTIES. Sp. gr., 1.75. Soft. Inert. Insoluble. Stable. Odorless. Non-toxic. Intensely black.
PURPOSE AND FUNCTION. Inert filler. Color. Finish. Easily incorporated, low-cost black with excellent aging qualities.
METHODS OF USE. Add directly to the rubber.
VULCANIZATION. No effect on cure.
PATENTS. Not disclosed.

Clays

Hard clays used as fillers possess distinct reenforcing value in rubber compounding and are resorted to where color or cheapness are considered.

Aerfloted Paragon

CHEMICAL COMPOSITION. Hydrous aluminum silicate.
SELLER. J. M. Huber, Inc.
APPLICATIONS. Footwear, mechanicals, molded articles, heels, soles, extruded products, and battery boxes.
PHYSICAL STATE. Cream color. Aerfloted 99.85% through 200-mesh screen.
PROPERTIES. Sp. gr., 2.60. Stable. Non-toxic. Soft texture Insoluble.
PURPOSE AND FUNCTION. Inert filler. Contributes hardness and tensile reenforcement.
METHODS OF USE. Mill directly into rubber.
VULCANIZATION. Retards cure slightly.
PATENTS. Not disclosed.

Aerfloted Suprex No. 1

CHEMICAL COMPOSITION. Hydrous aluminum silicate.
SELLER. J. M. Huber, Inc.
APPLICATIONS. Mechanicals, molded articles, heels, soles, extruded products, and air bags.
PHYSICAL STATE. White. Aerfloted 99.5% through 325-mesh screen.
PROPERTIES. Sp. gr., 2.60. Stable. Non-toxic. Soft texture. Insoluble.
PURPOSE AND FUNCTION. Inert filler. Contributes hardness and tensile reenforcement.
METHODS OF USE. Mill directly into rubber.
VULCANIZATION. Retards cure slightly.
PATENTS. Not disclosed.

Aerfloted Suprex No. 2

CHEMICAL COMPOSITION. Hydrous aluminum silicate.
SELLER. J. M. Huber, Inc.
APPLICATIONS. Mechanicals, molded articles, heels, soles, extruded products, battery boxes, and air bags.
PHYSICAL STATE. Pinkish gray. Aerfloted 99.5% through 325-mesh screen.
PROPERTIES. Sp. gr., 2.60. Stable. Non-toxic. Soft texture. Insoluble.
PURPOSE AND FUNCTION. Inert filler. Contributes hardness and tensile reenforcement.
METHODS OF USE. Mill directly into rubber.
VULCANIZATION. Retards cure slightly.
PATENTS. Not disclosed.

Aluminum Flake

CHEMICAL COMPOSITION. Hydrous aluminum silicate.
SELLER. Aluminum Flake Co.
APPLICATIONS. Tire treads, inner tubes, footwear, mechanicals, molded articles, and druggists' sundries.
PHYSICAL STATE. White, 99.75% through 325-mesh screen.
PROPERTIES. Sp. gr., 2.60. Stable. Non-toxic. Smooth texture. Insoluble.
PURPOSE AND FUNCTION. Inert filler. Contributes hardness and tensile reenforcement.
METHODS OF USE. Mill directly into rubber.
VULCANIZATION. Retards cure slightly.
PATENTS. Not disclosed.

China

Same as Aerfloted Paragon, *which see.*

Dixie

CHEMICAL COMPOSITION. Aluminum silicate.
SELLER. R. T. Vanderbilt Co.
APPLICATIONS. Tire beads, footwear, mechanicals, molded articles, heels, soles, insulation, extruded products, clothing, tiling, and tire-curing bags.
PHYSICAL STATE. Powder, 99% through 300-mesh screen.
PROPERTIES. Sp. gr., 2.60. Stable. Non-toxic. Insoluble. Color white to cream.
PURPOSE AND FUNCTION. A high-grade hard clay for stiffening and reenforcing practically any compound.
METHODS OF USE. Add directly to the rubber as a filler in high or low loadings.
VULCANIZATION. Slightly retards cure.
PATENTS. None

Dixie Junior

CHEMICAL COMPOSITION. Aluminum silicate.
SELLER. R. T. Vanderbilt Co.
APPLICATIONS. Footwear, mechanicals, molded articles, heels, soles, insulation, extruded products, tiling, tire beads, and tire-curing bags.
PHYSICAL STATE. Powder, 99% through 300-mesh screen.
PROPERTIES. Sp. gr., 2.60. Stable. Non-toxic. Insoluble. White. Similar to Dixie but obtained from an adjacent deposit.
PURPOSE AND FUNCTION. High-grade hard clay for stiffening and reenforcing practically any compound.
METHODS OF USE. Add directly to the rubber as a filler in high or low loadings.
VULCANIZATION. Slightly retards cure.
PATENTS. None.

Kaolin

Same as Aerfloted Paragon, *which see.*

McNamee

CHEMICAL COMPOSITION. Aluminum silicate.
SELLER. R. T. Vanderbilt Co.
APPLICATIONS. Soft, good-color clay for cheap compounds.
PHYSICAL STATE. Powder, 99% through 300-mesh screen.
PROPERTIES. Sp. gr., 2.60. Stable. Non-toxic. Insoluble. White. Soft texture.
PURPOSE AND FUNCTION. Filler. Stiffener.
METHODS OF USE. Add directly to the rubber in high or low loadings.
VULCANIZATION. Slightly retards cure.
PATENTS. None.

Par

CHEMICAL COMPOSITION. Aluminum silicate.
SELLER. R. T. Vanderbilt Co.
APPLICATIONS. A hard, off-color clay for stiffening and loading cheap compounds.
PHYSICAL STATE. Off-color powder, 99% through 300-mesh screen.
PROPERTIES. Sp. gr., 2.60. Stable. Non-toxic. Insoluble. Cream colored. Hard texture.
PURPOSE AND FUNCTION. Filler. Stiffener.
METHODS OF USE. Add directly to the rubber in high or low loadings.
VULCANIZATION. Slightly retards cure.
PATENTS. None.

Witco

CHEMICAL COMPOSITION. Colloidal aluminum silicate.
SELLER. Wishnick-Tumpeer, Inc.
APPLICATIONS. Tire treads, carcasses, beads, inner tubes, footwear, mechanicals, belting, packing, hose, molded articles, heels, soles, insulation, extruded products, druggists' sundries, etc.
PHYSICAL STATE. Light cream-colored powder, 99% finer than 325 mesh.
PROPERTIES. Sp. gr., 2.60. Inert. Stable. Odorless. Non-toxic. Insoluble.
PURPOSE AND FUNCTION. Smoothness of finish. Tensile reenforcement. Markedly increases resistance of rubber to abrasion and tear.
METHODS OF USE. Add directly to rubber.
VULCANIZATION. Witco clay produces a very flat curing curve to stocks accelerated with Captax and guanidine.
PATENTS. Not disclosed.

Addenda—Dispersed Ingredients

Colloidal Micronex

CHEMICAL COMPOSITION. Aqueous dispersion of rubber grade of carbon black.
SELLER. Binney & Smith Co.
APPLICATIONS. In all kinds of latex work and various types of aqueous solutions.
PHYSICAL STATE. Paste form.
PROPERTIES. Colloidal suspension containing about 35% carbon black.
PURPOSE AND FUNCTION. Carbon black in stabilized colloidal form.
METHODS OF USE. Add directly to latex or other suspension or solution.
VULCANIZATION. No effect on rate of cure.
PATENTS. Not disclosed.

Koroseal—a New Plastic[1]

Some Properties and Uses

S. L. Brous and W. L. Semon[2]

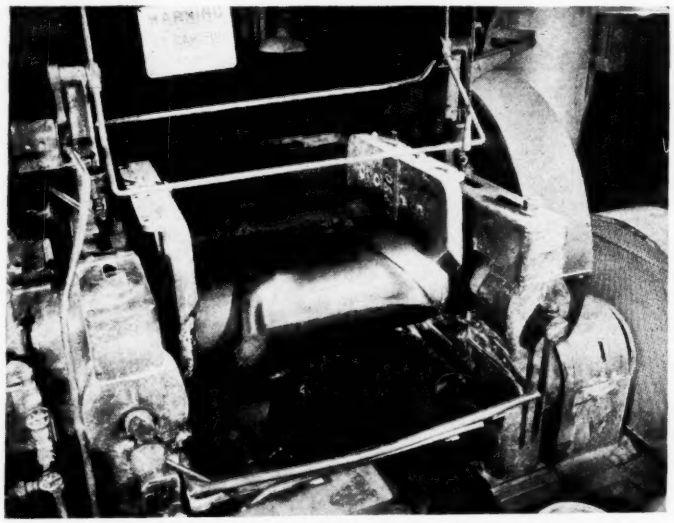

Fig. 1. Milling of Koroseal

RUBBER has found its widest use in industry because its properties can be altered and improved by compounding and cure to give strong, flexible, resilient products which are resistant to abrasion, impervious to fluids, electrically insulating, and relatively inert chemically. For such other desirable characteristics as resistance to oils and solvents, and freedom from attack by air, sunlight, and oxidizing materials, skillful compounding has brought marked improvements, but even better properties are needed to meet the demands of modern industry.

The search for synthetic rubbers has been stimulated not merely by the desire for an economically independent source of supply, but also with the hope that there might be obtained materials having properties superior to the natural product. Whitby and Katz[3] have published a comprehensive historical treatise dealing with the development of numerous synthetic rubbers which have appeared in the last few years.

It has been believed that linear polymers obtained from dienes hold most promise for the preparation of rubber-like materials. Carothers[4] has studied the relation between the structure of dienes and the types of polymerization products which may be obtained therefrom. On the basis of these data he inferred that, from the standpoint of their polymerization products, the best dienes will be of the type $CH_2:CXCH:CH_2$, in which X is an activating group other than alkyl or aryl. In general it has been found that there may be obtained polymerization products with physical properties equal to, or often superior to those of natural rubber, and with marked resistance to the action of solvents and chemicals. Among the many types of organic materials which will polymerize, the vinyl compounds only recently have been modified suitably to yield commercial rubber-like materials.

In 1927 Ostromislensky[5] claimed that the polymerization products of vinyl chlorides might be divided into several classes according to their solubilities. The first, or acetone-soluble portion, he chose to call α-caouprene chloride. Likewise, the second, or chlorobenzene-soluble portion, he named β-caouprene chloride. The substantially insoluble portion, he termed γ-caouprene chloride. This latter tough, horny, heat-stable material has been shown to be substantially unaffected by sunlight or by hot or concentrated oxidizing agents.

Semon[6] has shown that, although the completely polymerized vinyl halides are insoluble in practically everything at room temperature, they are soluble in a large number of materials at a

Fig. 2. Sheeted, Tubed, and Calendered Koroseal

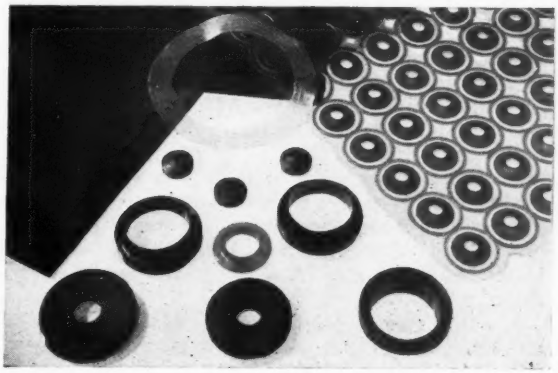

Fig. 3. Koroseal Molded Articles

[1] Presented before the Division of Industrial and Engineering Chemistry at the eighty-ninth meeting of the American Chemical Society, New York, N. Y., Apr. 22 to 26, 1935. Reprinted from *Ind. Eng. Chem.*, June, 1935, pp. 667-72.

[2] B. F. Goodrich Co., Akron, O.

[3] G. S. Whitby and J. R. Katz, *Ind. Eng. Chem.*, 25, 1204 (1933).

[4] W. H. Carothers, *Ind. Eng. Chem.*, 26, 30 (1934).

[5] I. Ostromislensky, Canadian patent No. 270,225, Apr. 26, 1927.

[6] W. L. Semon, U. S. patent No. 1,929,453, Oct. 10, 1933.

sufficiently high temperature. He disclosed the formation of rubber-like gel structures by the treatment of highly polymerized vinyl halides with plasticizers of an elevated temperature followed by cooling. These products were given the name "Koroseal" and have served as a basis for the developments of this new class of materials.

The generic term "Koroseal," however, refers to a broad class of compositions with properties varying from those of hard rubber to those of jelled rubber cement embodying modified, substantially insoluble polymers of vinyl halides. By adaptations of composition and of methods or processing, a variety of useful rubber-like materials has been produced, the physical and chemical properties of which may be varied over a wide range by compounding, particularly by the choice of plasticizer. It is necessary to distinguish between plasticizers and solvents, and we shall arbitrarily term as plasticizers the relatively non-volatile materials, and as solvents, the readily volatile materials. Those soluble or insoluble materials which are not plasticizers or solvents, but which are added to modify the processing or to change the appearance or properties of the finished product, will, according to the usage common in the rubber industry, be termed "pigments." To avoid confusion, all data given in the subsequent portion of this paper will be based on vinyl chloride compounds containing a single representative plasticizer—namely, tricresyl phosphate.

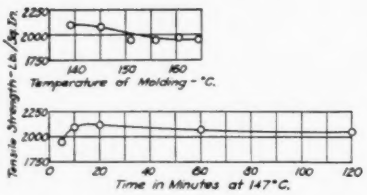

Fig. 4. Effect of Time and Temperature of Molding on Tensile Strength of Koroseal

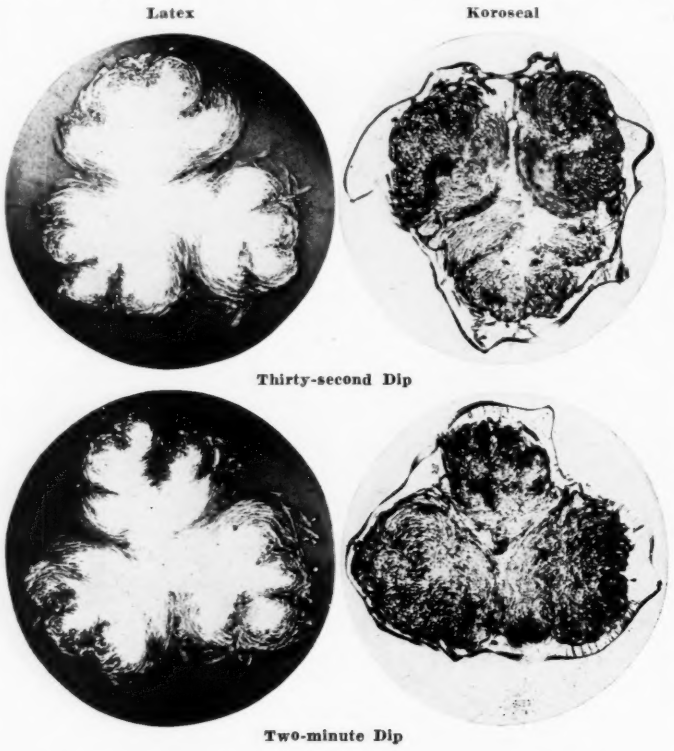

Fig. 5. Photomicrographs Showing Impregnation of Cord by Koroseal Solution and Rubber Latex

Processing

Since Koroseal is thermoplastic, it can be worked under similar conditions and with the same equipment used for processing rubber. Koroseal in most of its forms may be plasticized on hot mill rolls (Figure 1), calendered to various gages, and extruded through dies to give products similar to those shown in Figure 2. Mill roll temperatures approximate 105° C. (221° F.). Because of its lack of tack, Koroseal is somewhat harder to work than most rubber compounds, but with proper care and experience no difficulty is encountered. Its softer modifications may be mixed readily in a glass-lined, steam-jacketed mixer.

Koroseal resembles rubber with respect to the trapping of air blisters, in that thin sheets (0.125 to 0.6 mm.) are usually air-free, especially if run on an odd-speed calender; while the thicker gages (0.8 mm. and above) usually have air blisters if run in a single ply. The softer stocks may be plied up at the calender into a fairly coherent sheet although the ply adhesion is not so good as with masticated rubber.

Koroseal may be uniformly extruded in all sizes and shapes within the limits of the extruding machine. This property is very useful in the preparation of tubing for use as such or for blank stock for further processing.

In some of its forms, such as die-run tubing and the harder sheeted stocks, Koroseal may be used directly without molding, but it is more often necessary that it be molded. For this purpose hydraulic presses with steam-heated platens are employed with either flash or plunger-type molds, dependent to some extent on the shape of the article to be prepared. Figure 3 shows a number of shapes into which the material has been formed. The softer stocks may be plied up, taped, and integrally bonded in open steam. The harder stocks should be press-molded because higher pressures are necessary for cohesion of the laminations. To prevent distortion it is generally necessary to cool the articles in the press before removal from the mold. The average molding temperatures vary from 147° C. (297° F.) to 160° C. (320°F.), depending on the stock and size of article to be molded.

Scrap Koroseal, such as mold flash and trimmings, is easily reworked. Repeated milling and molding does not present practical difficulties and apparently produces no deterioration of the material. This property permits the reduction of losses on molded articles and does not, as in the case of rubber, necessitate a chemical treatment for reclamation. Figure 4, where tensile strength has been plotted against time (at 147° C.) and temperature (20 minutes) of molding, respectively, shows that Koroseal is substantially unaffected by long heating at practical molding temperatures.

Koroseal in its uncompounded form is a translucent material whose natural color varies, with the choice of plasticizer and with the extent of milling or molding, from a very pale amber to a dark brown.

Koroseal behaves like rubber in that it forms highly viscous solutions with solvents, but is unlike rubber in that milling of the stock does not reduce the solution viscosity. The solids content of the solutions normally used is approximately 10% by weight. Since gelation occurs on cooling, these solutions must be used at or near

the boiling point of the solvent. However, even with these limitations, Koroseal solutions offer commercial possibilities in fields such as impregnation of coating of fabrics, coating of metal parts such as plating racks, and coating of paper. Figure 5 shows the excellent impregnation of tire cord that is obtainable with a Koroseal solution as compared with rubber latex of the same concentration.

Compounding

Practically all of the recognized rubber-compounding materials have been incorporated with Koroseal. Each might be discussed separately, but to do so would be needless repetition. Generally speaking, these materials belong in two groups—those which are soluble in or are wet by the Koroseal, and those which are neither soluble in nor wet by the Koroseal. Included in the former group are such pigments as whiting, asbestos, clay, zinc oxide, lithopone, gas black, iron oxide, magnesia, lead oxide, and organic and inorganic colors. In the noncompatible group are such materials as factice, synthetic and natural rubbers, and nitro-cellulose. The compatible materials, when added in quantities up to 25% by volume of the batch, act as stiffening and coloring agents. The chief advantages to be gained by compounding Koroseal are to increase hardness, decrease resilience, and in other ways modify properties to meet service requirements. Physical tests have revealed no increase in tensile strength due to pigmentation.

Sulphur, either alone or in the presence of the common rubber accelerators or activators, gives no effects other than those shown by pigments, but when sodium sulphide is used in conjunction with the sulphur, a reaction occurs on the application of heat which in effect substantially reduces the thermoplasticity of the stock. It is immediately obvious that a compound so prepared will have enhanced value in services at elevated temperatures. It is also apparent that processing is facilitated since it is not necessary to cool the stock in the molds before removal.

(*To be concluded*)

Retreading Patents

(*Continued from page* 36)

end, and means for receiving a tool by which tongue and groove may be forced to interlock.

160. Grange, 1,980,134, Nov. 6, 1934. A tire retreading vulcanizer includes annular vulcanizer and matrix sections removably and replaceably carried thereby; the vulcanizer sections have skirt portions forming continuations of the matrix radially inwardly of the vulcanizer; the skirt portions are removably and replaceably supported on the vulcanizer sections.

161. Pilblad and Fetter, 1,983,705, Dec. 11, 1934. A repair unit for tire casings has a rigid support conforming to the surface of the casing as to a limited area corresponding to the repair, a pneumatic pad adapted to engage the opposite side of the casing covering a corresponding area, and adjustable means for supporting the pad adjacent the casing applying an initial pressure to the work, and means for inflating the pad to apply a predetermined vulcanizing pressure to the area to be repaired.

162. Manning, 1,995,892, Mar. 26, 1935. A tire retreading apparatus has a tire mold to fit over the circumference of a casing for receiving a rubber strip between mold and casing to retread it. The mold comprises a relatively thin annular metal rim grooved inwardly to form circumferentially extending beads on the inside surface, heating means on the outside of the rim including a pair of separate oppositely positioned coils together acting to heat the entire surface of the rim, each coil comprising tubing extending back and forth across the outer face of the rim with a steam inlet at the top and an outlet at the bottom, and means for reenforcing the rim to limit radial expansion from excessive pressure in the tire, the means including wire reenforcing carried in the grooves in the rim to provide a continuous wire band around the rim in each groove.

163. Murphy, 1,996,971, Apr. 9, 1935. A vulcanizer comprises an annular element formed of a lower fixed segment and a pair of movable segments pivotally connected at one end to the adjacent ends of the fixed segment, the segments, with inner peripheral surfaces recessed, being of substantially equal circumferential lengths and having independent heating chambers, sectional cooperating matrices of complementary lengths removably disposed in the recessed portions of the segments and movable with the movable segments, the matrices having tread forming portions on the inner peripheral surface thereof, and removable and replaceable continuous circular sidewall engaging members disposed upon opposite sides and forming annular inwardly extending continuations of the matrices, there being interengaging formations between the adjacent ends of the matrices and the members thereby to secure them against relative movement when the segments are closed.

Self-Healing Inner Tube[1]

A self-healing inner tube structurally designed to prevent deflation after puncturing is secured by lining the tube during its manufacture with a tread ply of rubber of special softening composition. The following formula gives satisfactory results.

	%
Phosphoric acid	2
Clay	1¾
Rosin oil	3
Rubber	93¼

The particular softening agent used is ortho-phosphoric acid of 85% strength. The clay serves as a vehicle for the phosphoric acid. The clay and acid are mixed together before being added to the other ingredients. The rosin oil serves as a softener and tack producer. The ingredients are mixed on a rubber mill in the usual manner and may be calendered and slit into strips. In the construction of an inner tube by the pole or flat drum method one of these strips is used as a lining for that half of the tube toward the tread. The application of heat to the tube results in vulcanization of the body structure, but the special stock layer, due to the presence of the chemical agent and absence of sulphur, accelerator, or other vulcanizing ingredients in its composition, does not vulcanize. On the contrary it becomes extremely plastic, almost viscous in form, and interiorly is very sticky. Although the non-tacky layer in the tube causes the surface of the special stock layer to be somewhat less sticky so that it will not adhere to the opposite wall of the tube should it come in contact therewith, it is preferable that the finished tube be kept in lightly inflated condition. In the event of puncturing by a nail the sticky layer adheres to the nail so that when the nail is withdrawn, it draws back some of the sticky stock with it so as completely to seal the hole through the body structure.

[1] U. S. patent No. 1,992,514, Feb. 26, 1935.

EDITORIALS

The Tire Industry Ranks among New Industries

RUBBER tire and inner tube manufacturing is one industry among eighteen new manufacturing ones that have sprung into existence during the fifty-year period prior to 1929, according to the report of a survey being conducted by the National Industrial Conference Board. These manufactories gave employment to 1,123,314 wage earners in 1929, which does not consider the added millions that were engaged in furnishing raw materials, power, transportation, sales, and distribution.

It is, of course, well known that many other branches of the rubber industry are of even more recent origin than that of tires and tubes and that the thousands of workers engaged in these pursuits could with perfect feasibility be added to the figures of this report, thus making the good showing that is revealed even better, yet conservative. Such alterations, however, would not change the order of importance that is set forth.

From the point of view of the number of wage earners involved the manufacturing of rubber tires and tubes is exceeded by only three of the other seventeen new industries, namely: electrical machinery and appliances, motor vehicles, and motor vehicle bodies and parts. It is, indeed, interesting to note the substantial position taken by the rubber industry in the progressive industrial expansion of the United States in the period of slightly over the last half century.

Confidence Is Growing

AMEASURABLY increased optimism seems to be definitely supplanting the long endured hope for business revival. According to economic surveys the durable goods industries, so essential to healthful business balance, have been active beyond that point which might have been expected under normal seasonal conditions. Greater-than-seasonable declines, that have been so characteristic of the summer seasons of the depression years, have applied to only a few specific industries this past summer, not to business in general.

The business survey committee of the National Association of Purchasing Agents states in its advance bulletin August 21, "It begins to look like politicians and axe grinders can not retard business expansion much longer. There is a general wave of confidence developing. The bad news seems to be generally discounted."

What would seem to be a decided turn in the frame of mind of men in the rubber industry is evident in all sections of the country. Reports indicating business improvement as compared with last year, those stating a volume experience of more than seasonal expectancy, and the ones advancing sound reasons for further improvement during the coming fall and winter months, and in 1936, outnumber, by far, the less-encouraging kind.

Other quite commonly shared opinions are that NRA nullification has aided the conduct of business by the relief that is felt of taking government regulation out of the manufacturing picture, thus increasing the flexibility of economical management; that internal leadership should be established within the industry, to effect real cost-plus-profit principle of doing business rather than the volume-at-any-cost type, too prevalently employed now; and that business is improving in spite of government impositions, rather than because of its helps.

The tone of opinion now indicates the inception of confidence. Of this the British point of view as expressed in *Morrison's Monthly Review*, August, 1935, is interesting:

"Money in America is cheap and abundant, money has been pumped into the economic system but, so far, confidence has been lacking, and confusion of thought and effort has prevailed. As we have seen in our own country, confidence is essential if advantage is to be taken of available credit and opportunity, and if the stock market recovery in America continues into the Autumn we may see the American agriculturist and industrialist getting on to his toes ready for a jump forward."

Panama Plantations

THE reported acquisition of 2,500 acres of land in the Province of Colon, Panama, by the Goodyear Plantations Co. for the development of rubber plantations may prove to be of much future significance. That rubber can be cultivated in Panama is an established fact. The possible advantages of a nearby source can be easily imagined when it is considered that the United States uses half of the entire world's consumption of crude rubber.

D C McRoberts

EDITOR

What the Rubber Chemists Are Doing

Synthetic Rubber Industry

THE following observations on the possibilities of synthetic rubber manufacture are from the paper of E. R. Bridgwater,[1] who spoke on "Practical Aspects of Nieuwland's Work," at the Nichols Medal Award to Father J. A. Nieuwland for his basic work on syntheses from unsaturated hydrocarbons.[2]

"With the practically unlimited domestic reserves in this country of coal and limestone for the production of acetylene and of salt for hydrogen chloride, obviously it will be possible, if a national emergency should arise, to equip ourselves quickly to produce a sufficient quantity of chloroprene rubber to supply the nation's needs. Moreover, acetylene can be produced from petroleum, as well as from coal, although the process is not yet fully developed on a commercial scale.

"Unlike the synthetic rubbers that had preceded it, chloroprene rubber has its use in times of peace as well as in war. Because of its superior resistance to oils, heat, oxidation, and ozone and sunlight deterioration, as compared with natural rubber, and because of its low permeability to gases, there are many places in our industries and arts where it can be used to much better advantage than the natural product. These distinctive properties are making it possible to create a synthetic rubber industry in times of peace which will serve as a nucleus for expansion if we should be so unfortunate as to be visited by another war. If it were not for these distinctive characteristics of chloroprene rubber, its peace-time production would be possible only through the aid of a government subsidy or import restrictions, since the cost of manufacture is still far greater than the cost of growing natural rubber."

[1]Manager, Rubber Chemicals Division, E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.
[2]*Ind. Eng. Chem.*, July, 1935, pp. 847-54.

Relation of the Dyestuff Industry to Other Industries[1]

Ivan Gubelmann[2]

IN THIS article the author discusses activity in organic chemicals before, during, and after the war and the accomplishments and problems of the dyestuff industry during the last fourteen years. Certain of these have had direct and important relation to the progress of the rubber industry as the following excerpts clearly show.

Rubber Chemicals

The dyestuff industry cannot claim the development of the best accelerators or antioxidants for the rubber industry. Certain rubber companies had become research-conscious long before the war. As early as 1906 they used imported aniline as an accelerator which was followed by the more satisfactory diphenylthiourea, also made by the rubber industry from imported aniline. A few years later they started to use *p*-aminodimethylaniline made from imported raw material. At the beginning of the war the industry was forced to manufacture its own dimethylaniline. About that time hexamethylenetetramine came into use as an accelerator and was manufactured by a domestic fine chemicals concern.

In the field of rubber chemicals the most constructive developments have taken place during the last fourteen years, also true of the dyestuff industry. There has been a marked improvement in the strength of new accelerators, and today we are using only about one-third to one-eighth of the amount previously used. The appearance of diphenylguanidine as a rubber accelerator in 1920 or 1921 was a great step forward. It was a cheaper and stronger accelerator than those used previously. Shortly after, accelerators consisting of the condensation product of an aliphatic aldehyde with an aromatic amine appeared on the market. A few years later mercaptobenzothiazole and the thiuram disulphides came into use.

The use of rubber antioxidants started some time in 1925 with the introduction of the condensation product of acetaldehyde with aniline. Shortly after, the condensation product of acetaldol- and *α*-naphthylamine came into use.

Synthetic Rubber

The chemistry on which the dyestuff industry has based the production of synthetic rubber is simple, at least theoretically. It is the chemistry of double and triple bonds involving the polymerization of simple aliphatic compounds. 1,3-Chlorobutadiene polymerizes easily to a polymer which has already proved its usefulness in many fields in competition with natural rubber, in spite of its much higher price. In actual manufacture many difficulties were encountered because of the difficulty of controlling operations. It has been shown repeatedly in this paper how pronounced the effect of a small amount of an organic chemical may be. In the manufacture of synthetic rubber this fact is detrimental because of the powerful influence of a number of impurities on the finished product. To polymerize an organic chemical and to prevent it from polymerizing, when such a change is undesirable, are quite different matters. In addition to the usual construction and operating problems there are still numerous details to be worked out, but we think we are on the way to establishing an American synthetic rubber industry which years from now will be regarded as a great contribution to our national life. Again, experience gained in the dyestuff industry has furnished the knowledge necessary to deal with such a difficult manufacturing problem.

[1]Abstracted from *Ind. Eng. Chem.*, June, 1935, pp. 618-26.
[2]E. I. du Pont de Nemours & Co., Inc., Wilmington, Del.

Wax Colors

A line of permanent organic colors with paraffin is available either dry or master-batched in rubber. These are finding favor in stocks for tiling when color and brilliance of surface is desired. The wax in the combination enhances the effect and makes it easy to maintain, as well as contributing protection to the surface against deterioration by weathering.

Latex-Insulated Wire[1]

ELECTRICAL insulation of wire is practical only with stable, purified 100% rubber latex because normal latex contains too many water soluble materials. Materials introduced into the rubber must not only be non-conductors themselves but also must not absorb water. The table shows that as latex is purified, its water absorption disposition becomes practically zero after a sufficient number of creaming operations have been performed.

TABLE 1. WATER ABSORPTION AT ROOM TEMPERATURE OF FILMS FROM MULTICREAMED LATICES

Type of Latex Film	Water Absorption in Distilled Water after: 25 Hrs.	50 Hrs.	75 Hrs.	100 Hrs.
	Milligrams per square centimeter			
Normal	12.1	13.0	13.3	13.5
Once-creamed ...	4.8	6.2	7.6	8.9
Twice-creamed ..	1.4	2.2	3.0	3.6
Thrice-creamed .	0.9	1.4	1.6	1.8

Insulation Method

In the simplest manufacturing process for preparing latex wire, the conductor is led into a container holding a properly purified and compounded latex and is then passed upwards in a vertical direction into a drying chamber where the latex is heat-coagulated. Then it is brought down into another bath of latex compound and subsequently passed vertically into further drying chambers. This process is continued until the desired thickness of rubber is obtained on the conductor. The latex compound may be either vulcanized or unvulcanized. The type and temperature of the drying chambers and the resultant physical and electrical properties of the conductor will, to a great extent, be influenced by whether or not the latex has been prevulcanized or vulcanized during a drying cycle. The process is very simple, easy to control, and inexpensive to operate. The fact that the conductor leaves the latex in a vertical direction insures a coat of latex uniform all around the conductor. In other words, in the parlance of the insulation engineers, the conductor at the conclusion of the operation is properly centered. There are no thin spots in the insulation. This property is a distinct advantage and manifests itself in the following ways: (1) thinner wall of insulation to obtain the same equivalent electrical result; (2) lesser amount of compound used to obtain the same equivalent electrical result; (3) a considerable reduction in weight for the same length of insulated conductor; and (4) reduced cost in any braiding or covering of this insulated conductor.

All of these improved qualities have been obtained with no sacrifice of electrical insulation, strength, or age resistance of the rubber compound.

[1] "Properties of Latex-Insulated Wire." J. McGavack, *Ind. Eng. Chem.*, Aug., 1935, pp. 894-96.

Rubbone

THE following notes on Rubbone, the resin obtained by the oxidation of rubber, are quoted from a report on an investigation in progress for the Rubber Growers' Association[1] to ascertain new uses for rubber. Of special interest are the following points condensed from the report.

Of all the reactions which natural rubber undergoes, oxidation, next to vulcanization, may be said to rank in the first place. For not only does the life and usefulness of all raw and vulcanized rubber depend on the course of this reaction but attempts to create useful oxides may be regarded as based on the same reaction.

A standard procedure for the rubber resin known as Rubbone is as follows: a solution of milled blanket crepe in white spirit (kerosene) is made by dissolving 20 parts by weight of rubber in 80 parts by weight of solvent, adding ½-part of cobalt lineolate, and aerating at 80° C. (176° F.) until a sample drawn off from the bulk shows a quick separation of sediment and a clear supernatant solution of the resin. The clarified solution is distilled by steam or in vacuo to separate the Rubbone resin.

The properties of Rubbone indicate its possible application in paints, varnishes, and enamels, for electrical insulation particularly in the impregnation of coils, etc., and for molding.

On exposure to air Rubbone hardens slightly on the surface which becomes non-tacky and solid. This change is accompanied by a small increase in weight, indicating further oxygen absorption. On heating the resin becomes more fluid, and is quite fluid at 100° C. (212° F.). When maintained at temperatures above 100° C. a thermosetting takes place through the mass at the same time as oxidation proceeds on the surface exposed to the air. Heating for 24 hours at 140° C. (284° F.) is necessary to fully set the resin so that it becomes insoluble in white spirit, etc. At 200° C. (392° F.) it sets in 1½ hours, although liable to porosity, whereas at 100° C. (212° F.) it requires 50 hours.

[1] "Rubbone." H. P. and W. H. Stevens, *Bull. Rubber Growers' Assocn.*, Mar., 1935, pp. 131-34.

Trade Color Designations

PASTE COLOR. A thick water suspension of dye or pigment which is insoluble in water.

PULP COLOR. A water suspension of insoluble pigment, usually a precipitated lake.

DISPERSED COLOR. An insoluble dye or pigment treated mechanically or chemically so as to be easily dispersible in the medium intended for use. Mechanical dispersion is accomplished by means of a colloid mill or similar equipment. Chemical dispersion is effected by colloidalizing chemicals in no way altering the nature of the dye or pigment.

Rubber Bibliography

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SURVEY FROM THE HAMBURG RUBBER WATCH TOWER. W. Esch, *Kautschuk*, July, 1935, pp. 138-40.

ACCELERATOR PRACTICE. From the Point of View of Economy. *Gummi-Ztg.*, July 19, 1935, pp. 723-24.

COMPOSITION OF SOME CHLORINATED RUBBERS. G. F. Bloomfield, E. H. Farmer, and C. H. Miller, *J. Soc. Chem. Ind.*, Aug. 9, 1935, pp. 266T-67T.

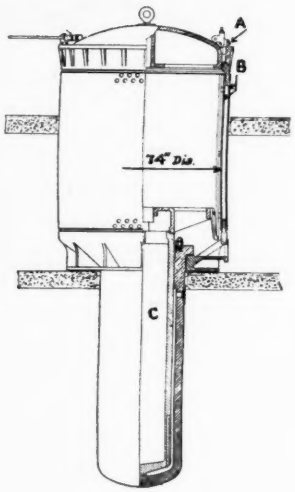
Society of Rheology

The Society of Rheology will hold its seventh annual meeting in the auditorium of the Bell Telephone Laboratories, Inc., 55 Bethune St., New York, N. Y., October 11 and 12, 1935. The two-day proceedings will include general papers and three symposiums: 1, viscosity and mobility; 2, rubber; and 3, plastics.

Papers announced for the rubber symposium follow: "A New Simplified Extrusion Plastometer for Unvulcanized Rubber," J. H. Dillon, Firestone Tire and Rubber Co., Akron, O.; "Absolute Rheology of Raw Rubber," M. Mooney, U. S. Rubber Products, Inc., Passaic, N. J.; "Heat Generation in the Flexometer," R. S. Havenhill, St. Joseph Lead Co., Monaca, Pa.; "Further Work on the Drift of Rubber Bands under Constant Load," M. L. Braun, Catawba College, Salisbury, N. C.; and "Hysteresis Loss of Raw Vulcanized and Pigmented Rubber," C. E. Barnett, New Jersey Zinc Co., Palmerton, Pa.

Friday evening, October 11, the Society is invited to attend a joint dinner with the New York Group, Rubber Division, A. C. S., to be held in the clubrooms of the Building Trades Employers Association, 2 Park Ave., New York, N. Y.

New Machines and Appliances



Adamson Ram Vulcanizer

Ram Vulcanizer

THE following description of a ram vulcanizer for large tires is in correction of the confusing one given on page 54 of the July 1, 1935, issue under the caption "Special Vulcanizer."

The sketch represents a vulcanizer built for one of the largest American tire manufacturers. It is built in accordance with the A.S.M.E. code. The double shell construction, *B*, is used because of the unusual hydraulic pressure developed. This construction puts the cover rivets in double shear and reduces bending moment of the cover ring to a minimum. The three-point roller suspension at *A* saves gaskets and accurately centers the cover. The inside diameter of the vulcanizing chamber is 74 inches; ram, *C*, 30 inches diameter; stroke 11 feet 8 inches. The hydraulic capacity is 2,000 pounds per square inch. This vulcanizer should be of interest to tire manufacturers who will appreciate the value of this type of equipment for the larger sizes of tires. The Adamson Machine Co., Akron, O.

Fire Gun

THE device pictured is a new first-aid fire extinguishing hand appliance for control of small fires, even those that start by ignition of highly flammable materials such as carbon bisulphide, rubber cement, etc. The material used in this fire gun is a dry compound which will not cake, freeze, or deteriorate, is perfectly harmless, and involves no maintenance cost. When this powder is discharged at the base of flames, an inert gas is immediately generated. Being 2½ times heavier than air, the gas rapidly settles over the burning material and, falling upon the burning surface, insulates it and prevents its reignition. Its effectiveness to subdue a fiercely burning fire is illustrated by the fact that in ten seconds it extinguished the flames of mixed kerosene, benzol, naphtha, and ether burning in a pool of seventy square feet area. Garrison Engineering Corp.

Garfire Gun

Chemical Feed Machine

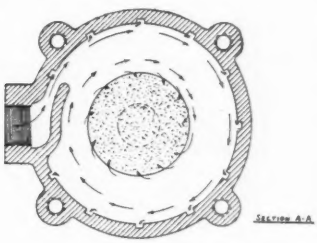
Dry Compound Feed Regulator

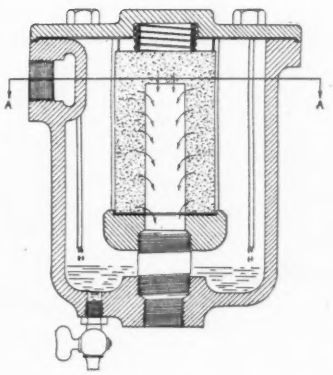
DRY compounds will feed with controlled flow from a newly designed vibrating hopper which consists of an inverted cone-shaped receptacle opening into a delivery trough, both of which are agitated with electromagnetic vibrators. Variation in the rate of feed from 2 ounces to 2,000 pounds per hour is obtainable by adjusting the angle of the trough with respect to the hopper. Syntron Co.

Air Filter

THE new design of air filter pictured embodies a new principle in the separation of water, oil, and other foreign materials from compressed air. It combines centrifugal separation and diffusion through a highly porous filter medium. The air enters through an orifice located on the upper rim of the shell and circles around the inner rim at high velocity throwing out the oil, water, and other liquid entrainment into vertical slots by centrifugal force. As the air slows down in velocity, it approaches the center axis and passes through the walls of a highly porous filter stone molded in the shape of a tube closed at one end. The open lower end of this tube is mounted on a hollow pedestal allowing the filtered air to pass downward and out through the exit.

The filter tube is a recent development composed of aluminum oxide crystals mixed with a ceramic bond and molded into tube shape. It is vitrified at 1,300° C. with the resultant porosity of 38% of its volume. The filter tube so thoroughly diffuses the air in passing through its porous structure that oil or water is absorbed up to the saturation point. A space filter tube is furnished with each unit for replacement once in ten days or two weeks. The removed stone is cleaned in any oil solvent and dried for the next replacement. The cleansing process restores its full absorbent properties to the filter tube. Delicate laboratory and vulcanizing control equipment operating with air should benefit with this device in its air supply line. R. P. Adams Co.



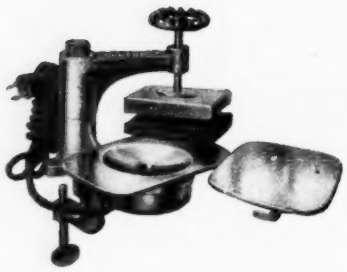


Adams Filter

Valve to Inner Tube Vulcanizer

A NEW electric vulcanizer for attaching "Dubltite" valves to inner tubes is here pictured. It makes a permanent airtight adhesion job of all-rubber base valves to tubes. Its electric current consumption is exceedingly low, costing only about 5¢ for continuous operation all day. Vulcanization requires only 10 to 15 minutes, depending on size. The electric heating unit for 110 volts works on both AC and DC current. Current consumption is 95 watts. The vulcanizer cannot overheat and may be left connected all day or indefinitely without any harm resulting to it.

No attachments are necessary, and every detail has been worked out to insure a sturdy, economical, portable, foolproof vulcanizing machine. A. Schrader's Son Division of Scovill Mfg. Co., Inc.



Schrader Electric Vulcanizer

Oil Seal

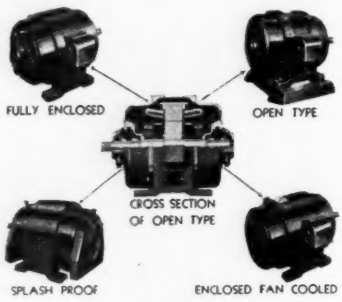
THE packing device pictured is designed for the retention of bearing lubricant within bearing areas and the exclusion of foreign matter from the bearings. It comprises an adapter, a spreader, a sealing member, and a case. The latter is flanged over the adapter ring to serve as a housing and to complete the unit.

The adapter is a metal ring flanged to contact the spreader and exert constant pressure upon it. The spreader is a flexible metal ring with V-tooth edges, which set into the convex face of the sealing ring. By its difference in angularity it exerts uniform pressure upon the lip of the sealing member, thus causing it to hug the shaft.

The sealing ring is molded under heat and pressure from an oil and heat resistant composition. It has a cross-sectional shape resembling a modified V or chevron form. The Garlock Packing Co.

Convertible Motors

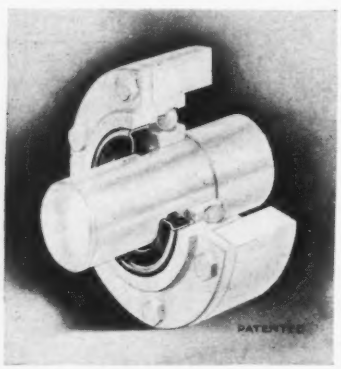
AN ENTIRELY new line of convertible squirrel cage and slip ring induction motors, offering all standard frequencies for service ranging from 110 to 220 volts, is pictured. Built in accordance with the standards adopted by the National Electrical Manufacturers Association, the outstanding feature of these motors is their ready convertibility from open type to fan cooled, splash proof, or totally enclosed construction. This conversion is accomplished through the design of the frame, end heads, and bearings to permit interchangeability in the four above-mentioned types of single or multi-speed squirrel cage and slip ring motors.



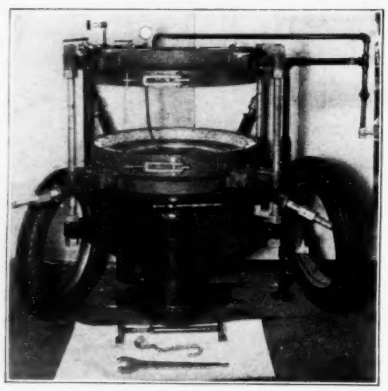
Harnischfeger Convertible Motors

Among other interesting features is the unique mounting of the stator laminations which are stacked between heavy steel end rings and the entire assembly, then welded to the frame. This construction provides absolute rigidity and makes it impossible for the stator core to shake loose.

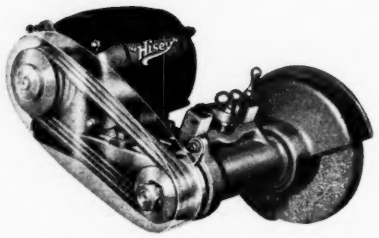
The rotor windings are assembled from round or rectangular hard drawn copper bars placed in the rotor slots without insulation or slot wedges. The ends of the bars are brazed to the end rings by an electric arc torch. Harnischfeger Corp.



Garlock Klozure Sealing Ring



Bacon Hydraulic Retreader



Portable Electric Roll Grinder

Electric Roll Grinder

THE portable roll grinder here pictured is of particular value in rubber goods manufacturing plants and those producing reclaimed rubber where calender and refiner rolls should be maintained in good condition. This grinder is driven by a powerful constant-speed motor operating at practically the same speed under any load within its rated capacity. Not depending upon speed for power, specially bonded wheels to withstand excessive speeds are unnecessary; therefore ordinary vitrified wheels can be used with absolute safety. The grinding spindle together with the motor can be swung end for end so that grinding can be done either to the right, as pictured, or to the left of the machine. The direction of rotation of the wheel is reversible through the motor.

The V-belt drive transmits more than 99% of the motor output without slippage. This type of drive requires very little belt tension; consequently a minimum non-productive load is imposed upon the bearings, materially increasing their life. The drives have liberal reserve capacity for transmitting the rated horsepower of the machine. In every detail the design and equipment of the machine conform to the latest approved engineering practice. The Hisey-Wolf Machine Co.

Hydraulic Retreading Mold

THE advantages claimed for the hydraulic adjustable retreading mold illustrated give it high rank as regards simplicity, ease of handling, and speed of production. The single mold with proper matrices will cure all passenger car sizes. The equipment is supplied completely assembled ready to attach to air line and boiler. It is operated with a four-way air valve which permits air to enter an oil cylinder, forcing the oil against the mold ram, thereby closing the mold. Opening the mold is effected by admitting air pressure on top of the mold ram, thus pulling the mold open and freeing the tire that is contained therein. Bacon Vulcanizer Mfg. Co.

Rubber Industry in America

OHIO

IN THE rubber industry the volume of business for most firms so far this year has exceeded that of 1934. The volume for the last half of 1935, though, is expected to be greatly lessened, owing to indicated lower sales and production on tires, although some firms recently experienced heavier orders contrary to seasonal trends. Mechanicals should not suffer so much.

One tire manufacturer feels, however, that the industry should gain by late winter. Lower unit consumption so far indicates a larger demand for replacement tires and tubes. Also, the average miles of service per unit have, if anything, decreased during the past year because of the greater proportion of small-diameter tires and faster starting and stopping and higher speeds of the newer cars. This condition should result in greater buying of tires, especially for replacement. Another favorable point is the increased business from rural areas due to the greater buying power of the farmer. Besides preliminary figures indicate a growing number of cars and trucks on the road. But until the tire industry decides to work for profit rather than volume, the present demoralized and chaotic conditions both in manufacturing and sales will continue.

Temporarily the disqualification of the NRA had an unfavorable effect on the tire industry, but rumors now abound of a serious attempt at a much-desired stabilization of prices. Whether or not too much business has been written at the demoralized prices to offset any favorable action now taken is difficult to determine. It has also been reported that since the end of the NRA some rubber companies have reduced wages.

So far it is felt the Wagner Labor Relations Bill will not materially change present conditions. But it is believed that eventually a long court battle will result regarding the unconstitutionality of the measure.

Dayton Rubber Mfg. Co., Dayton, O., through President John A. McMillan announced its acquisition, effective August 15, of the tire manufacturing firm, McClaren Rubber Co., which had been operating in Charlotte, N. C., since 1919. The latter plant will soon be closed and its business, good will, and molding equipment transferred to the Dayton factory, where production will be increased and employes put on full time. Five leading McClaren officials will resign as such to join Dayton. They are President Irvin Eisbrouch, who will have charge of distribution of McClaren tires, which will be made in a separate division from Dayton ones; Vice President Harry E. Williams, to become sales manager; Vice President Charles G. Miller, chemical engineer; Treasurer P. J. Mayle; and Production Manager A. G. Heller. Mr. McMillan further stated that McClaren distributing organizations, extensive in the South and extending to the Midwest and Northwest, will be maintained as well as the established sales organization. The acquisition of the southern concern did not include purchase of the buildings or land.

Goodrich Activities

Thirteen employes of The B. F. Goodrich Co., Akron, having completed twenty years of service during July, are eligible to receive Twenty-Year service pins, which will be presented by President J. D. Tew in December. They are: Claude H. Clifford, Frank Willis, Nick Slachetka, David L. Jones, Ben Ginnett, Gus Mack, Edward L. Browne, Andrew Walch, Joseph W. Belair, Earl S. Knight, L. C. Roberts, Sadie Miney, Boston branch, and A. C. Kelly, district manager of the company in Chicago.

The following attended a series of company conferences in Akron: George Madole, assistant managing director and works manager, Goodrich, France, of Colombes; F. A. Nied, superintendent, Pacific Goodrich Rubber Co., Los Angeles, Calif.; J. E. Gulick, superintendent, Canadian Goodrich Co., Ltd., Kitchener, Ont.; and R. E. Moody, superintendent, Euzkadi, Mexico, D. F., Mexico. The conference was addressed by Akron officials, with E. H. Barder, general superintendent of the tire division, presiding.

F. B. Jewett, vice president of the American Telephone & Telegraph Co., addressed a group of Goodrich men July 25 on "Research." He heads the largest research organization in this country, the Bell Telephone Laboratories, with a staff of thousands of workers and an annual budget of several million dollars.

R. C. Peterson, Goodrich development engineer in the tire division, recently spoke before the Mercator Club on "New Uses of Rubber."

A total of $360 in checks was presented to Howard Peters in the Goodrich mechanical division, by G. L. Matthias, general superintendent, when the July suggestion awards of the company were announced. Mr. Peters won his major prize, $300, for a suggestion on a new method of inspecting miniature tires. He also was awarded $40 for a new device and two additional $10 awards for new devices.

Total awards were $1,700, presented to more than 170 company employes.

The Goodrich footwear division and the Hood Rubber Co. have leased three floors, covering 75,000 square feet, in the MacVeagh Bldg., Chicago, Ill., to be entered September 1.

J. A. Hoban, manager of retail sales, has announced the following appointments at indicated Goodrich Silvertown Stores. Managers: Akron, W. P. Hepburn; Decatur, H. M. Davis; Findlay, E. H. Frowine; Long Beach, Charles Evett; Los Angeles, A. E. Seaward; and Steubenville, S. W. Carson. Credit and Operating Managers: Akron, W. D. Meadows; Connersville, O. D. Landrus; Fort Wayne, L. H. Bierman; Lawrence, A. MacKenzie; Longview, C. D. Hayworth; Marion, F. C. Megerth; and San Angelo, W. D. Smith. New Unit: 210-16 W. Fourth St., Bethlehem, P. B. Wood, manager, A. I. Stump, credit and operating manager.

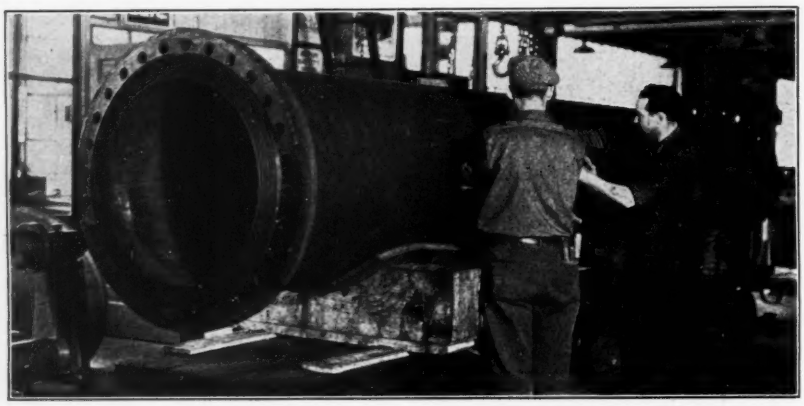
John R. Gammeter, 680 N. Portage Path, Akron, consulting engineer in the rubber industry, has perfected a universal "Cover-All" milk bottle hood of a pliable composition material which has sufficient resiliency to allow it to be stretched over the top of a milk bottle, and yet is stiff enough to cling to the bottle and not come off under the type of usage to which the bottles are subjected. Being always under tension on the top of the bottle, it is always a perfect seal and will not loosen as a result of a jar or bump. It also has the advantage of not being pushed off the top of the bottle if the milk is allowed to freeze in cold weather. The hoods are made in such a way that any combination of two colors may be used. Mr. Gammeter has designed capping and printing machinery which may be sold to dairies at a very low cost. The hand capping machine for the small dairy will place the hoods on the bottles at the rate of twenty to thirty per minute. Automatic capping machines for larger dairies may be placed in the filling lines at practically no extra cost. The printing machine is a simple device equipped with a multigraph attachment and will print the hoods at the rate of about sixty per minute. The only attention which it requires is the changing of the electrotype and loading of the magazine. This machine will enable the dairies to purchase their hoods direct from the manu-

facturer's stock, thus being able to purchase hoods at the lowest possible prices without additional cost for printing setups. The Purity Milk Cap Co., Toronto, Canada, has taken over the manufacturing and selling rights in Canada and Great Britain and has purchased plant equipment and space for production of 1,000,000 hoods per day, and will be in operation not later than November 1.

Otto J. Kuhlke is now in charge of all sales in the western district for the National Rubber Machinery Co. with headquarters in Akron.

The Pharis Tire & Rubber Co., Newark, is celebrating its silver jubilee this year. The firm now has 1,800 dealers throughout the country and export accounts in Canada, Mexico, Europe, and Africa; while its payroll has grown to a listing of over a thousand employes. At present Pharis is running three eight-hour shifts daily, six days a week. Besides automobile tires, the company has for three years now been manufacturing bicycle tires with great success, at the rate of a thousand a day. Also made in this department are tires for scooters and lawn mowers. Present daily production of inner tubes is 3,600. The concern maintains warehouses also at Atlanta, Ga., and Boston, Mass. Carl Pharis is general manager of the firm.

The Goodyear Tire & Rubber Co., Akron, recently completed what is believed to be the largest hose ever built by any manufacturer, a dredge discharge hose, built in 18-foot sections, with an inside diameter of 30 inches. Rubber flanges were molded on each end and backed up with heavy metal retaining rings. Total weight of the shipment approximated 3,800 pounds. The hose will be used in government service for dredging along the Mississippi River. The eighth annual Goodyear Frolic, attracting about 60,000 picnickers, was held at Euclid Beach Park, July 29. Music, sports, games, races, contests, swimming, and eating furnished the highlights of the day. Numerous prizes were awarded. Fred Colley was general chairman of the picnic committee.



Section of World's Largest Dredge Discharge Hose

MIDWEST

THE rubber industry in the Midwest is, in general, enjoying good business. Footwear manufacturers, though, found business less than that of 1934, a state due in some measure to an unusually wet spring and summer. Fall and early winter should provide improvement because of better general conditions.

Here again the elimination of the NRA has brought relief to business men generally. Hours and wages of the codes are still maintained, but manufacturers, unchecked, can turn out work with greater flexibility to the advantages of both the manufacturer and his customer. But further deterrents to business are seen in much of the legislation recently passed in Washington.

National Safety Council, 20 N. Wacker Dr., Chicago, Ill., in its annual report of the accident experience of all industries during 1934 shows the rubber industry as the safest large industry on record. The rubber industry, with 133,000,000 man hours worked, rates fifth in frequency and fourth in severity. To continue this record, and even better it, the Council through the chairman of its membership committee, E. W. Beck, who is also supervisor of safety at the United States Rubber Co., 1790 Broadway, New York, N. Y., is writing rubber manufacturers and all factory managers in the industry suggesting they secure display buttons for their workers. These buttons, white, 1¼ inches in diameter, bear the words, in green letters: "Keep the Rubber Industry the Safest Large Industry on Record."

Underwriters' Laboratories, 207 E. Ohio St., Chicago, Ill., has appointed F. B. Quackenboss, assistant chief engineer of the Western Factory Insurance Association, Chicago, a member of the Fire Council to fill the vacancy caused by the resignation of Emil Schuenemann, formerly chief engineer of the association.

J. W. Speaker, research engineer with the Shaler Corp., Waupun, Wis., resigned to form the J. W. Speaker Corp., 3020 W. Clarke St., Milwaukee, Wis., to manufacture hot patch vulcanizers and automotive accessories. Associated with Mr. Speaker are Dr. Stine, in charge of manufacturing and research, formerly with the University of Chicago; A. T. Stinne, advertising counsel; K. Shefler, president of the Creative Paper Corp.; and E. D. Breen, counselor at law. The new firm also has an office at 538 So. Wells St., Chicago, Ill.

PACIFIC COAST

THE rubber trade has been very good, with factories working to capacity, except for regular vacation shutdowns. Quite an upset was experienced recently when tire prices were reduced 50% off the list, and practically every company sold as many tires at this price as they wished. This reduction, however, lasted only two days. Mechanicals manufacturers report that business during the first half of 1935 was far ahead of that during the same period last year, and indications are that this trend will continue.

So far the disqualification of the NRA has had no marked effect on the rubber industry of the Pacific Coast. Code prices and conditions are being maintained.

Griffith Rubber Mills, manufacturer of rubber covered rolls and mechanical goods, 22nd and Nicolai Sts., Portland, Ore., up to July 1 had operated on a twenty-four-hour schedule, but for the next two weeks reduced to an eight-hour-day basis. Then conditions improved, and the plant increased to sixteen hours daily and expects soon to run twenty-four hours. Griffith has expanded its factory considerably the past year, having purchased the Giant Rubber Co., also in Portland, and consolidated the two firms at the former factory.

Industrial Accident Prevention Associations, Inc., 600 Bay St., Toronto, Ont., Canada, at its recent quarterly general meeting of directors, held in Hamilton, elected the following officers: president, E. E. Sparrow, Imperial Varnish & Color Co., Ltd., Toronto; first vice president, J. H. Vernor, Western Clock Co., Ltd., Peterborough; second vice president, A. G. Wright, Dominion Foundries & Steel, Ltd., Hamilton. This election, following the annual general meeting in April, was due to the fact that F. H. Rutherford, of the B. Greening Wire Co., Ltd., then elected president, was compelled to resign owing to illness.

EASTERN AND SOUTHERN

TIRE sales by eastern makers so far this year are below the 1934 level. Should, however, the long-missing consumer buying appear soon, the fall and winter seasons should show much improvement over last year's trade; otherwise the tire industry during 1935 will have witnessed a most unsatisfactory year.

New car and truck sales are considerably in excess of those of 1934. Since new models will be shown early in November this year, the usual seasonal slow-up has not appeared. As a result, replacement of passenger car tires has been less than expected, and no immediate betterment is anticipated. Truck tire volume will total a slightly increased unit volume, but will show greatly reduced sales returns because of heavy buying during recent price disturbances. Retreading, vulcanizing, and repairing will show less volume than in 1934; while rebuilt tires for reconditioned car sales also are in smaller demand.

The 1935 replacement tire market is not likely to show any gain over that of 1934, but the original equipment business has increased with new car production.

Opinion is that the Wagner Labor Relations Bill will result in a wave of attempted new organization by the A. F. L., but that any attempt to unionize hitherto unorganized industries will be strongly resisted.

E. I. du Pont de Nemours & Co., Inc., has opened a large illuminated exhibit in the Hotel DuPont, Wilmington, Del., showing the relation which du Pont products have to industry and trade in general. This display will be continued for several weeks and then be transferred to the boardwalk at Atlantic City, N. J.

Jean Duval-Delahaye, technical manager, Ste. Des Specialites Mecaniques, 25 Rue St. Ambroise, Paris, France, spent three weeks in the United States interviewing compounding ingredients and rubber manufacturers regarding late developments in both lines. He was associated with the Paramount Rubber Co., Paterson, N. J., in 1928-29, following his graduation as a chemical engineer abroad. He is much interested in the American point of view concerning both rubber technology and manufacturing and plans coming here every other year to keep somewhat abreast of these fields by personal contact. Mr. Duval-Delahaye returned to Paris, leaving New York August 15.

Harry Kleinert, of the I. B. Kleinert Rubber Co., College Point, Long Island, N. Y., and Mrs. Kleinert sailed for Europe July 27 on a combined business and vacation trip. Their tentative plans were to visit several European countries before returning about October 1.

Bachrach

Edmund S. Burke

Kelly-Springfield Reorganized

Edmund S. Burke, president of the newly organized Kelly-Springfield Tire Co., makes the following statement:

"Effective August 5 The Kelly-Springfield Tire Co. has completed its reorganization whereby The Goodyear Tire & Rubber Co. acquires financial control. Kelly's manufacturing, sales, and advertising operations will be wholly independent.

"Briefly stated, our policies will be:

"Utilizing our forty-one years of experience in the manufacture of rubber products, we will operate our own plant at Cumberland, Md., and will manufacture a complete line of passenger car, truck and bus tires and tubes, as well as accessories and repair material for every class of motoring service.

"We will maintain sales policies designed to attract the highest type of tire marketers and truly representative dealers. We will also maintain adequate warehouse stocks at strategic points, thus assuring the public prompt and convenient service."

Lee Rubber & Tire Corp., Conshohocken, Pa., according to Vice President A. A. Garthwaite, enjoyed sales for the eight months ending June 30 that were 11% more than those in the corresponding period a year ago. Lee Rubber is running five days weekly instead of four as in June.

John A. Schaeffer, vice president and director of research of the Eagle-Picher Lead Co., has accepted the presidency of Franklin and Marshall College, Franklin, Pa., and assumed his new duties August 1. Dr. Schaeffer was connected with the lead company for twenty-four years, entering its employ in 1911 as chief chemist.

The Continental Machinery Co., 277 Broadway, New York, N. Y., was recently organized for the development and manufacture of rubber machinery. The firm is headed by Harry J. Smith and Guy L. Hammond, each with over a quarter of a century of active experience in the rubber machinery field and with a keen knowledge of what is required to increase the efficiency of all types of plants. Mr. Smith was for many years with the National Rubber Machinery Co. as eastern states and export manager and prior to that position was a manufacturer of rubber goods. Mr. Hammond is well known in the trade as president of the Black Rock Mfg. Co., manufacturer of rubber machinery. The new company will control the manufacture of a number of important equipment specialties as well as various standard pieces of machinery. It will specialize in manufacturing liquid latex equipment and will devote much attention to this phase of the business in the belief that the use of liquid latex is only in its infancy and its future is most promising. The services of a foremost chemical engineer in this line have been acquired, who specializes in the development of machinery and processes—exclusively for Continental—incident to the handling of latex and its use in the manufacturing of products. Continental will, in addition, maintain a staff of technical engineers whose services will be available to clients in the solving of their various problems. Sales engineers of the company will also be located in all parts of the world to assist directly in the handling and servicing of Continental equipment. The company has already begun to function and has been in receipt of numerous inquiries and orders for its products.

Wishnick-Tumpeer, Inc., manufacturer and importer of rubber compounding ingredients, 251 Front St., New York, N. Y., on August 19 moved its offices to the fortieth floor of 295 Madison Ave., New York.

Engineers Book Shop, 168 E. 46th St., New York, N. Y., has completed arrangements with the Institution of the Rubber Industry, London, England, for copies of its bi-monthly publication, *Transactions,* for distribution in America.

The Titanium Pigment Co., Inc., 111 Broadway, New York, N. Y., has acquired the services of Joseph Breckley as a special representative in the sales department, according to I. D. Hagar, eastern district sales manager. Mr. Breckley was graduated from Rutgers with a B.S. degree. Since then he has been associated with The B. F. Goodrich Co., Akron, O., Lambertville Rubber Co., Lambertville, N. J., the Seamless Rubber Co., New Haven, Conn., and Dovan Chemical Corp., New York, N. Y.

(Continued on page 60)

NEW ENGLAND

VOLUME of business with the smaller rubber companies in New England is above the 1934 figure, but the larger concerns do not seem to be faring so well. At present there exists a more even flow of business rather than the spotty condition that prevailed the earlier part of the year.

The dropping of the NRA has not materially changed hours of work or rates of pay. But an improvement in business has resulted, seemingly due to the relief felt that government regulation has been removed from manufacturing enterprises. Labor strifes due to the Wagner Labor Relations Bill are, however, expected to cause another industrial setback.

United States Rubber Products, Inc., Mechanical Goods Division, Boston, Mass., branch, has appointed two new salesmen, William M. Hunter and Norman R. French. Mr. Hunter represented the New York Belting & Packing Co. for ten years. Mr. French has been with U. S. Rubber eight years, the last five on the mechanical order desk.

Rhode Island Rubber Club

The next meeting of the Rhode Island Rubber Club will be held at the Metacomet Golf Club, East Providence, R. I., September 19. Golf will be played in the afternoon, and a steak dinner will be served at 7.00 p.m. The name of the speaker is not available at present, but an interesting paper is assured.

At the meeting held June 27 at the Pawtucket Golf Club, the following officers were elected: president, L. D. Walker, Collyer Insulated Wire Co.; secretary-treasurer, F. E. Rupert, Anaconda Wire & Cable Co.; Executive Committee: Ernest G. Brown, National India Rubber Co.; D. C. Scott, Jr., Henry L. Scott Co.; E. L. Hanna, Davol Rubber Co.; N. G. Madge, U. S. Rubber Co.; Gladding Price, R. T. Vanderbilt Co.; Charles Berlow, American Wringer Co.; Arthur Carr, Carr Mfg. Co.; and Samuel Tinsley, Respro, Inc.

The paper at the June meeting, by E. M. Toby, Jr., manager of the Naphtha Division of the American Mineral Spirits Co., New York, N. Y., was "Petroleum Solvents—Origin, Specification, and Applicability to the Rubber Industry."

Golf championship of the club (members only) was won by Mr. Madge, with Mr. Weller, of Wishnick-Tumpeer, runner-up. The gross prize open to members and guests went to Everett Rupert, Anaconda Wire & Cable Co., with Mr. Solaman, of Binney & Smith, runner-up. The Kickers-Handicap went to Bob Wright, of Anaconda, with Frank Gerardi, of the same company, second. The low net went to Mr. Price with F. E. Rupert, second. A number of other prizes were distributed.

Godfrey Lowell Cabot, carbon black manufacturer and founder of the company bearing his name, endowed Norwich University, Northfield, Vt., of which he is a trustee, with a substantial gift to found a professorship in air traffic, regulation, and transportation. The chair is to be named in memory of the donor's eldest son, James Jackson Cabot, a world war army pilot who died five years ago. Dr. Cabot, *magna cum laude* graduate of Harvard, is seventy-four years of age and retains a keen interest in aviation activities in which he was a pioneer. He was the oldest commissioned officer in our naval air forces during the World War and actively participated in the Atlantic Coast patrol and experimental service at the age of fifty-six. The direct object of the professorship is to make a general survey of the air transport and regulation problem to the end of drafting an international air safety code in which the United States might be put in a position to lead, as did England years ago with respect to safety rules at sea. It is also an object to prepare specially trained men to promote the cause of air transportation in a sea that is navigable to every inch of the earth's surface. Dr. Cabot established an award of $10,000 last June for the person who first perfects a device to eliminate the hazards of flying in fogs.

Phillips-Baker Rubber Co. is erecting a one-story addition for vault purposes to its office building at 44 Warren St., Providence, R. I., to cost $1,500. The annual outing of the members of the Phillips-Baker Rubber Co. Mutual Relief Association was held at Chopmist Hill Inn, Scituate, July 21, at which there was a luncheon, sports, games, and a Rhode Island clambake.

British-American Mfg. Co., Springdale, Conn., will be refunded $42,291.38, an over-assessment on its 1918 income and profit taxes. The firm, which for many years rubberized cloth, was closed out by the receiver, Buell McKeever, and the plant sold. Schavoir Rubber Co., formerly of Stamford, Conn., has occupied part of this building for some time.

Armstrong Rubber Co., Inc., West Haven, Conn., under a consent cease and desist order by the Federal Trade Commission, will stop representing in advertisements of automobile tires and tubes that the prices at which it sells its products to consumers are manufacturers' wholesale prices, or that it sells to the consumer under a plan of distribution by means of which all middlemen's costs, profits, or other charges are eliminated, unless these representations are true in fact. The respondent company is ordered to stop representing in advertisements or assisting in the circulation of advertisements which tend to indicate that its tires contain more fabric plies than is the case.

Tyer Rubber Co., Andover, Mass., according to Hugh Bullock, has leased space at 111 No. Canal St., Chicago, Ill., for a branch office and warehouse, with Morton L. Paterson in charge. Although the prime object of the entire move is the better distribution of rubber footwear in this territory, this branch will also be headquarters for Tyer druggists' sundries and mechanicals.

Stedfast Rubber Co., North Easton, Mass., has appointed as factory manager George Woodward, for many years manager of the American Rubber Co. plant.

Anaconda Wire & Cable Co. officials at the Pawtucket, R. I., branch, commenting upon the present business situation, conditions, and prospects, a few days ago summarized the matter as follows: "The present year has been an especially satisfactory one to date, and the indications appear to be favorable for an indefinite continuance. At the present time there are some 300 persons employed at the Pawtucket plant, but it is expected, if conditions continue to indicate improvement, that within the next couple of months, at least 100 additional workers will be engaged for the various departments."

Arthur D. Little, Inc., Cambridge, Mass., the industrial research firm founded by the late Arthur D. Little, will eventually become a part of the Massachusetts Institute of Technology, under the terms of Mr. Little's will.

Rubber Trade Inquiries

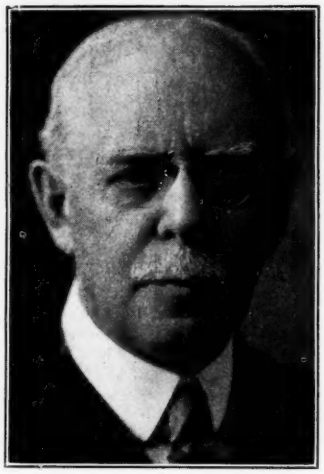
The inquiries that follow have already been answered; nevertheless they are of interest not only in showing the needs of the trade, but because of the possibility that additional information may be furnished by those who read them. The Editor is therefore glad to have those interested communicate with him.

No.	Inquiry
1847	Will represent U. S. firms in Norway and Sweden for new items not manufactured there.
1848	Manufacturer of rubber coasters.
1849	Manufacturer of accelerators Nos. 87 and 122.
1850	Manufacturer of Belgium foam rubber.
1851	Manufacturer of rubber household goods.
1852	Manufacturer of sponge rubber strips.
1853	Manufacturer of rubber solvents.
1854	Manufacturer of latex compounding ingredients.
1855	Manufacturer of rubber link-mat making equipment.
1856	Manufacturer of eight-inch sponge rubber balls.
1857	Manufacturer of rubber hose.
1858	Manufacturer of gelatines.
1859	Manufacturer of the Shreiner calender.
1860	Manufacturer of latex urethral and secum tubes.
1861	Supplier of plastic rubber.
1862	Manufacturer of electric vulcanizers.
1863	Manufacturer of mills used in making vulcanized compounds from scrap rubber.
1864	Manufacturer of bathroom and tub rubber mats.
1865	Wanted: books on rubber manufacturing.
1866	Manufacturer of rubber footwear machinery.
1867	Manufacturer of rubber footwear fabrics.
1868	Supplier of crepe rubber in sheets.
1869	Manufacturer of molds for dipping latex goods.
1870	Wanted: literature on manufacturing insulated wire.
1871	Manufacturer of oxygen bombs.

OBITUARY

Arthur Dehon Little

DR. ARTHUR DEHON LITTLE, chairman of the board and founder of Arthur D. Little, Inc., Cambridge, Mass., internationally known firm of chemists and engineers, died suddenly August 1 at Northeast Harbor, Me.



Arthur D. Little

Dr. Little was born in Boston December 15, 1863, and graduated from the Massachusetts Institute of Technology in 1885. He began his professional work as chemist to the Richmond Paper Co., Rumford, R. I. In 1886 Dr. Little opened a laboratory in Boston in partnership with R. B. Griffin to engage in the general commercial practice of chemistry. For seven years after Mr. Griffin's death, which occurred in 1893, Dr. Little carried on the business alone, forming a new partnership with the late Dr. William H. Walker in 1900, which continued until 1909, when the business was incorporated. During the war he acted as consultant to the Chemical Warfare Service and the Signal Corps.

Dr. Little was president of American Chemical Society, 1912 to 1914; American Institute of Chemical Engineers, 1919; and Society of Chemical Industry (London), 1928 to 1929. He was also a member of many other American and foreign scientific societies, held honorary degrees from Columbia, Tufts, and the University of Manchester (England). In 1931 he was awarded the Perkin Medal.

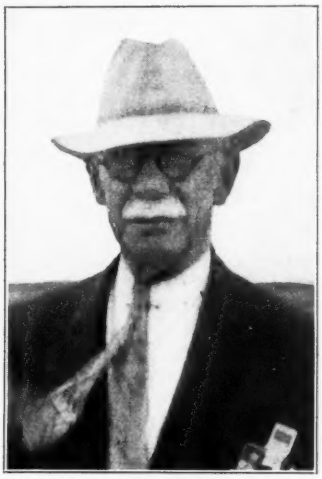
Surviving are his wife, a brother, and a nephew.

Henry Z. Cobb

AN IMPORTANT machinery inventor was lost to the rubber industry when Henry Z. Cobb passed away on July 20. He had been development engineer for the United States Rubber Co. for the past twenty-eight years and connected with the Providence, R. I., plant the last twelve. During his lifetime he obtained nearly two hundred patents, 80% of which were related to rubber.

Mr. Cobb was born in Chicago, Ill., sixty-nine years ago and attended grammar school, leaving when he reached the seventh grade. Incidentally, he came from a machinery inventing family. His grandfather invented the Pullman car; while his father invented many machines, none of which, however, were for the rubber industry.

Henry Z. Cobb's first important work was laying underground cables for the



Henry Z. Cobb

Chicago Fire Department. After this job was finished, he traveled abroad to regain his lost health.

Returning to America, he was one of the organizers and owners of the Electric Hose & Rubber Co., Wilmington, Del. When he finally sold out, Mr. Cobb took a year's vacation and then joined the Revere Rubber Co., Chelsea, Mass., where he brought out the process for making the first long-length hose. A few years later Revere decided to make golf balls; so the deceased was given the problem of developing necessary equipment. Practically every machine used in manufacturing golf balls by the United States Rubber Co., which had absorbed Revere, is of Mr. Cobb's invention. Later he was transferred to Passaic, N. J., where he did development work for the company's mechanical factories. A few years later he was sent to Providence where he worked until his death there.

He leaves his wife, two sons, four grandchildren, a brother and a sister.

Merwin J. Goldner

AFTER a long illness Merwin J. Goldner, secretary of the Corduroy Rubber Co., Grand Rapids, Mich., since its inception in 1919, died on August 1 from heart disease. From 1909 to 1912

Merwin J. Goldner

he had been office manager of the Grand Rapids branch of the Diamond Rubber Co. Then he joined the United States Rubber Co. in a similar capacity, leaving in 1919 to assist in organizing the Corduroy company.

Mr. Goldner was born in Grand Rapids forty-five years ago. He attended local grade and high schools and business college. The deceased was widely known as a fisher, hunter, and conservationist, as well as a capable business executive who will be sorely missed.

He was also a member of Grand River Lodge, No. 34, F&AM, DeWitt Clinton Consistory, the Shrine, Lions, Peninsular and Green Ridge Country clubs and a director of the Association of Commerce and chairman of its foreign trade committee.

Surviving are his wife, his father, a brother, and three sisters.

Funeral services were held August 3, on which date the Corduroy plant was closed.

F. W. Lawrence

FREDERICK W. LAWRENCE, 44, office manager for the American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y., died August 12. Born in Brooklyn, Mr. Lawrence went with the Asiatic Petroleum Co. and was office manager there when he left in 1925 to join American Cyanamid in the same capacity. Surviving are his wife and two sons.

Charles H. Furman

CHARLES H. FURMAN, 62, superintendent of the Grasselli Chemical Co. plant at Linden, N. J., for the last twelve years, died August 2. Surviving are his wife, four daughters, a son, and fourteen grandchildren.

(*Continued on page 60*)

NEW JERSEY

LATE summer finds most rubber manufacturing plants busy although some report slightly declining business. Hard rubber production has gained, but tires show no substantial increase despite the summer weather. Mechanical goods are holding their own. Firms making summer novelties had a good season.

Business volume to date is in excess of that of the same period last year. A natural decrease is expected the balance of 1935, but with prices tending to stiffen. A real revival seems in prospect for 1936 as utility buying will assure it. As prices stiffen, so does trade pick up; hence the industry is more optimistic than pessimistic. Much, of course, depends on bills affecting business passed by Congress.

A machinery manufacturer stated the rubber industry has not kept pace with other industries in ordering equipment.

The Wagner Labor Relations Bill has not been in effect long enough to affect rubber factories in this territory.

Thioko! Corp., Yardville, reports business much better than during last year, with increased foreign and domestic orders.

Puritan Rubber Co., Trenton, operating normally, is enjoying an improvement over the past few months.

Acme Rubber Mfg. Co., Trenton, reports little improvement in business the past month. J. A. Hoan, one of Acme's traveling salesmen, is recovering from an appendectomy in a Trenton hospital.

Essex Rubber Co., Trenton, is running normally. Lawrence M. Oakley, an executive of the company, was on a business trip through New England.

Pierce-Roberts Rubber Co., Trenton, enjoying a boom in business, is again operating with two shifts.

Thermoid Notes

E. R. Ross has been assigned to the Detroit office of the Thermoid Co., Trenton. His duties will include sales promotion, engineering and development work on friction materials and brake linings. Prior to joining Thermoid, Mr. Ross was with Warner Gear, General Motors Truck, Raybestos, Gatke, and Asbestos Textile.

D. P. Allen also has been sent to Detroit, to the carpet sales division.

Fire recently damaged material in one of the buildings at the Thermoid plant in Trenton. The blaze started when an oven door blew open, causing sparks to fly out.

Thermoid has announced that business is very good in all departments. Its subsidiary, Woven Steel Hose & Rubber Co., Trenton, is operating normally.

Horace B. Tobin, president of the latter company, and Mrs. Tobin have returned from a lengthy Mediterranean cruise.

The National Rubber Machinery Co., Akron, O., announces the appointment of Ralph W. Grant as eastern sales representative, replacing Harry J. Smith, of New York, N. Y., recently resigned. Mr. Grant, formerly Mr. Smith's assistant, brings to his new appointment eighteen years of continuous association and experience with the trade in the eastern district. His headquarters will continue to be at the Clifton Division of the company's works, Gettv and Wellington Ave., Clifton, N. J.

Jos. Stokes Rubber Co., Trenton, is experiencing a decided improvement in conditions at both its Trenton and Canadian plants.

Alligator Rubber Products Co., 110 Lillie St., Newark, purchased a one-story plant 20 by 200 feet on Ridgewood Ave. and an adjoining plot of ground, to be used for manufacturing purposes.

James Deshler and his wife, of New Brunswick, on August 21 celebrated their sixty-ninth wedding anniversary. Mr. Deshler, now ninety, was formerly general manager of the New Brunswick plant of the United States Rubber Co., with which he had been associated half a century.

Raybestos-Manhattan, Inc., Manhattan Rubber Mfg. Division, Passaic, will construct a two-story brick addition, totaling 1,100 square feet and costing $5,000 to its main building to be used for storage purposes. This addition will replace an old heater building used to house the vulcanizers. These have been removed to another part of the factory, and the old edifice has been demolished.

Raybestos-Manhattan, Inc., Passaic, N. J., earned net income of $752,360.59 during the six months ended June 30, 1935, equivalent to $1.17 per share, compared with net income of $719,831.98, or $1.12 per share, during the same period in the year prior. The balance sheet at June 30, 1935 revealed assets totaling $16,837,722.28, including $8,156,505.34 of current assets, equivalent to 9½ times the current liabilities of $844,193.46 at the close of the half year. The company had no banking or funded debt or other capital obligations. The book value of its 638,600 shares of stock outstanding, after deducting the 37,412 shares held in the treasury, was $23.62 per share. The net current assets represented $11.45 per share, of which cash and marketable securities amounted to $4.23 per share.

Pequanoc Rubber Co., manufacturer of reclaimed rubber, Butler, according to President J. F. McLean is making extensive additions to its plant, including a new boiler house and the increasing of storage space for handling rubber scrap. Thus Pequanoc is developing factory capacity and making its plant more efficient, better to serve its customers.

The Pocono Co., Trenton, finds business good. Holland B. Slusser, secretary and treasurer, spent his vacation along the California Coast.

La Favorite Rubber Mfg. Co., manufacturer of rubber specialties, Paterson, according to President C. R. Masten in June enjoyed the best month in several years. July, 1935, business was 81% of normal against 78% for July, 1934. August trade, of course, was quiet, but a gain is expected in September.

Luzerne Rubber Co., Trenton, reports an increased output in hard rubber business for the early fall trade.

C. Edward Murray, Jr., of Willow Gate Farm, near Princeton, has been ill in McKinley Hospital, Trenton, suffering from an attack of septic poisoning of the gland. He was formerly president of the Murray Rubber Co., and is now with the Crescent Insulated Wire & Cable Co., both of Trenton.

The Rubber Manufacturers Association, Inc., 444 Madison Ave., New York, N. Y., Mechanical Division, recently held its quarterly meeting at the Trenton Country Club, Trenton. Luncheon was followed by golf and dinner. A. D. Kunze, of New York, chairman of the group, presided.

Accurate Mfg. Co., 44 Hepworth Place, Garfield, manufacturer of rubber insulating and friction tapes, insulating compounds and specialties, has appointed as factory manager Louis J. De Holczer, who resigned August 1 from Jenkins Bros., Bridgeport, Conn.

Lambertville Rubber Co., Lambertville, has settled the recent strike caused by the discharge of an employe in the calender room. Now 250 men, nearly the entire force, are at work.

Mercer Rubber Co., Hamilton Square, business is about 15% ahead of last year's. Company officials are optimistic over the future.

Nevinol

Nevinol is a new coal by-product oil. It is neither a resin solution nor a soft resin, but is a separate polymer having a viscous liquid consistency and ranking as an intermediate high-boiling product between refined coal naphtha and paracoumarone-indene resin. There is no low-boiling solvent present and it is almost completely non-drying at ordinary room temperatures.

The valuable characteristics of the product suggest its use in many places, such as plasticizer in pyroxylin lacquers, chlorinated rubber coatings, plastic compounds, fly paper, adhesives, non-drying inks, caulking compounds, waterproofing compositions, rubber resin finishes, aluminum paint vehicles and pastes, and wherever an unsaponifiable, neutral, substantially non-drying, viscous oil is required.

Rubber Industry in Europe

GREAT BRITAIN

Plane Wing Anticer

The danger of collections of ice on airplane wings and control surfaces is said to be successfully combated by a newly patented process using an anti-freezing solution. The liquid, for instance ethylene glycol, to which a certain percentage of ethyl alcohol is added, melts the ice where it adheres to the material, thus loosening the ice which the air stream then sweeps away.

According to the London *Rubber Age*, the procedure is as follows. A layer of rubberized fabric is doped to the wing with the rubber surface uppermost. The liquid is conveyed by a rubber tube punctured along its length at quarter-inch intervals. The tube is made to adhere to the leading edge partly by a plastic cement or rubber sponge, which also serves to fair off the edge. A porous cotton fabric layer spreads the liquid to wet the leather covering on the leading edges of the airplane. Attached to the leather are strips of airplane fabric which, when doped to the wing, hold the leather covering firmly in place. Light piping carries the liquid to those parts of the machine requiring protection. Since the flow of liquid is small, the system is effective under hydrostatic pressure, and the flow to all parts is approximately uniform.

The equipment used on a Hart airplane weighed 30 pounds, including enough liquid for two hours under ice-forming conditions.

The device was patented by John Edwin Ramsbottom, chief chemist of the Royal Aircraft Establishment, Farnborough; Ben Lockspeiser, of its research staff; and Major J. Stewart, superintendent of technical development. The patent rights of the Anticer, as it is called, have been sold to Dunlop, subject to the usual conditions regarding free use by the Air Council, and the method is now offered to commercial aircraft concerns.

Rubber Safety Bumpers

Safety Bumpers Ltd., has produced a new safety bumper consisting of two rollers covered with Linatex rubber, about 8 pounds of rubber used in each roller. When the rollers hit an object in their pathway, as for instance a person who has been knocked down, they automatically begin to revolve and instead of scraping the body along the road, roll the body until the car stops. Since, moreover, the lower roller is normally only a few inches above the ground, the body cannot pass underneath and get crushed by the wheels. The rollers can be raised, when necessary, to prevent damage to the bumper, as when steep ramps or gulleys have to be negotiated, and kept in this position indefinitely as long as traveling continues at low speed; as soon as speed is increased, however, the bumper automatically falls back to its normal position.

Tire Resoling Plants

Henry Simon Ltd., Cheadle Heath, has acquired sole rights of an American method of "resoling" worn tires, by vulcanizing a new sole or band into the tread without touching the shoulders or sidewalls. Some months ago this firm began "tire resoling" at its Cheadle Heath works, and now it plans to establish branches in all the important cities. A second factory has already been started at Acton, London.

British Notes

Rubber mudguards, indistinguishable in appearance from those of metal, have been introduced experimentally on some 200 buses of the London Passenger Transport Board. Three rubber mudguards are used on each bus. The front near guard alone is of the usual metal type as the driver or mechanic leans on it when attending to the engine.

Greatly increased strength and durability are the advantages claimed for a new rubber treated moquette upholstery fabric which the Pile Fabric Mfg. Co. (Bradford), Ltd., is said to be producing.

A recent issue of the *Bulletin of the Rubber Growers' Association* mentions a new motor scythe fitted with 1½ h.p. engine and driving wheels of the disk type equipped with standard size, heavy tread, pneumatic tires. The machine runs smoothly on rough and uneven ground and can climb steep slopes without demanding any special effort on the part of the driver.

The Poppe Rubber & Tyre Co., Twickenham, Middlesex, has taken into partnership S. F. Poppe and R. T. Holden, both of whom have been actively connected with the firm for many years.

Irish Free State

Although the new factory of the Irish Dunlop Co., Ltd., Cork, has been in operation for some time, working to 80% capacity, it was not until June 30, 1935, that Sir George Beharrel, in the presence of a number of prominent persons, officially opened it. So far the output has been confined to tires in all the popular sizes, but rubber Wellington boots and plimsolls will also be produced by October.

The Irish Free State imposes a duty of 2s. per boot on rubber and canvas boots and shoes for men and women, and 9d. per boot on children's boots and shoes, to discourage importing this type of footwear. There are, besides, import quotas on these goods, and quite recently the quota was reduced from 1,000,000 to 250,000 pairs.

Certain sizes of automobile casings, formerly included in the Irish Free State "quota no. 1," have been removed from that quota and made subject to a separate quota, by an order of the Executive Council dated July 5. The new quota, for the period August 1, 1935, through January 31, 1936, limits the importation of the following sizes of tires to a total of 100 units: all 4.50- and 5.00-inch; 4.75 by 18 and 19 inches; 5.50 by 17 inches; and all the 5.25-inch sizes except 16 and 18 inches. (Imports of automobile tires of the other sizes originally subject to "quota no. 1" remain limited during the period July 1 through September 30 to 16,000 units.)

Import quotas of 450,000 square yards of rubberized fabrics and 500 articles of rubberized clothing for the period August 1 through October 31, 1935, were established by the Irish Free State Executive Council by orders dated June 21.

Germany

The first half of 1935 German exports of rubber goods increased from 63,208 to 66,752 quintals, but their value dropped from 20,273,000 to 19,250,000 marks. At the same time crude rubber imports declined from 393,879 to 318,318 quintals.

At the recent general meeting of the Deutsche Kautschuk Gesellschaft in Dresden, Werner Esch, industrial chemist and rubber expert, was awarded the society's bronze merit plaque in recognition of his work in rubber technology.

The government regulations for the tire industry and the cable and insulated wire industry, which were to have been revised after June 30, 1935, will continue unchanged for a further period, in the case of the former industry for two more months, and of the latter for another year.

The Kolnische Gummifaden-Fabrik vormals Ferd. Kohlstadt & Co., Koln-Dietz, rubber thread manufacturer, showed a net profit of 21,226 marks for 1934. The firm last year began produc-

ing its new pressed round thread, the process for which has now been perfected after many years of experimentation.

Kolnische's business during 1934 showed considerable improvement as far as home demand was concerned, and the number of employes rose from 321 to 388. But foreign trade was made especially difficult by competition from Japanese and certain American firms. These concerns were outsiders who greatly undersold members of the International Rubber Thread Association, to which Kolnische also belongs; consequently selling prices for rubber thread showed a further decline which all the efforts of the Association failed to prevent.

The German Chemists' Association held its annual meeting at Konigsberg from July 2 to 7.

Other European Notes

Rayon dust is a comparatively new material for use in manufacturing rubber goods that is supplied by a firm in Czechoslovakia, according to *Gummi- und Asbest-Zeitung*, of Vienna, Austria. The dust is obtainable either in the form of cut threads of artificial silk in lengths ranging from 0.2 to 1.5 mm. or as a powder; it comes bleached, unbleached, or in a variety of fast colors. The cut lengths are spread or sprayed on to surfaces rubberized with latex or rubber solution to produce artificial velvet or velvety designs on a plain surface. Last year bathing caps and shoes of this material were introduced into Austria and Hungary with great success. There are, of course, numerous other applications of the material, one of the most interesting being animal toys with realistic pelts. The pulverized silk is designed for products like cloth tops for card or billiard tables and could also be employed for imitation leathers of the suede type for the most diverse purposes.

Bata's branch at Borovo, Yugoslavia, is said to have begun the production of pneumatic tires.

Le Courroie Filastic (Procédé Bongrand), Paris, France, recently was formed to manufacture and trade in belting and cables made with the new type of latex and fiber thread known as Filastic. The firm is capitalized at 455,000 francs.

Effective July 15, 1935, the Norwegian import license requirement for various kinds of rubber footwear and rubber soled fabric footwear, established March 12, 1934, was abolished. At the same time the duty on rubber soled fabric footwear was increased from 2.16 to 2.25 crowns per kilo (both rates including duty surtaxes).

S. A. Continental, Torrelavega, Spain, was recently formed to manufacture tires and tubes and will use patents developed by the German Continental company. Capitalization is 2,750,000 pesetas. Spanish capital is held well represented in the new enterprise, and the Banco Central is said to have an important interest. It is believed that German capital is also participating. At present, it is pointed out, there are three tire and tube factories operating in Spain whose combined production is more than sufficient to supply the entire demands of the local market.

Italy

The rubber industry in Italy continues one of the busiest in the country. Up to the present year this prosperity was partly due to greatly increased motorization and partly to the government's policy of controlling manufacture. For according to a special law no new factories of any kind may be erected, not even the expansion of existing works may be undertaken, without special permission of the government. This year the rubber industry received an extra stimulus from the military preparations which have led to greatly increased home demand for all kinds of rubber goods, but more especially of tires. The result has been a considerable increase in the number of employes in the industry; 13,500 in May, 1934, to 14,000 in May, 1935, and about 15,000 in June.

The figures for 1934 show that even then activity was largely confined to covering home demands, for both exports and imports of rubber manufactures declined; while crude rubber imports increased. Total imports of rubber manufactures came to 24,806 quintals, value 23,790,000 lire, against 33,210 quintals, value 31,190,000 lire, in 1933; exports were 56,146 quintals, value 64,920,000 lire, against 79,196 quintals, value 94,808,000 lire. Crude rubber imports rose from 225,392 quintals, value 35,242,000 lire, to 243,372 quintals, value 64,663,000 lire.

The bulk of Italy's foreign trade in rubber goods is confined to pneumatic tires and tubes so that the decline in business in 1934 is chiefly due to the set-back here as the following figures show: imports, 12,888 quintals, value 7,089,000 lire, against 21,050 quintals, value 13,089,000 lire; exports, 45,963 quintals, value 50,554,000 lire, against 64,884 quintals, value 74,240,000 lire.

The Soc. Elletrica ed Elletrochimica del Caffaro, Milan, is establishing a new division in its works at Brescis to produce chlorinated rubber.

Eastern and Southern

(*Continued from page 55*)

Monsanto Chemical Co., St. Louis, Mo., has changed the name of its subsidiary, the Swann Chemical Co., with a plant at Anniston, Ala., to the Monsanto Chemical Co. of Alabama, according to President Edgar M. Queeny. Administrative and sales offices of the Alabama subsidiary, together with those of another former Swann property, the Provident Chemical Co., St. Louis, have been moved to the Monsanto company's new administration building in St. Louis. Sales offices of a third former Swann company, the Wilckes-Martin-Wilckes Co., Camden, N. J., have been consolidated with the Monsanto, New York office. A new sales division, the Swann products division, has been created to handle the sales of all goods of the former Swann companies. Henceforth these products will be sold under the Monsanto name. District sales offices are retained at Birmingham, Ala. Monsanto and its subsidiaries, the Merrimac Chemical Co., the Alabama concern, Provident Chemical, Wilckes-Martin-Wilckes, and the Rubber Service Laboratories Co. have moved into the R. C. A. building, Rockefeller Center, New York, N. Y.

Joseph Rossman has recently resigned from the U. S. Patent Office, Washington, D. C., and is now patent counsel for the Marathon Paper Mills Co., Rothschild, Wis., where he will organize and conduct the Patent Department.

Chas. M. Haskins, managing director, National Association of Waste Material Dealers, Inc., Times Bldg., New York, N. Y., and for years executive secretary of its Salvage and Reclamation Division, will address the American Transit Association at its annual convention in Atlantic City, September 25. His subject will be salvage operations as they apply to electric car and bus transportation equipment. The American Transit Association was formerly the American Electric Railway Association, but with the coming of busses it changed its name.

OBITUARY

(*Continued from page 57*)

Robert Lindley

ROBERT LINDLEY, 63, for over twenty-two years chief electrician for the Hamilton Rubber Mfg. Co., Trenton, N. J., died August 17 after an illness of three months. He was also a member of Trenton Forest, Tall Cedars of Lebanon. Surviving are his wife, three sons, and four daughters. Burial was in Trenton.

John A. Lyter

JOHN A. LYTER, 28, advertising manager for the R. & H. Chemicals department, E. I. du Pont de Nemours & Co., Wilmington, Del., was drowned August 2 while swimming in Kaolin Lake, just over the Delaware-Pennsylvania state line. Mr. Lyter, who was unmarried, joined the production department of the Roessler & Hasslacher Chemical Co. soon after graduating from Lehigh University. After the company was taken over by du Pont, Mr. Lyter became an assistant in the advertising and publicity division, and when it was made the R. & H. chemicals department, he became advertising assistant and chemist. In 1934 he was named advertising manager of the department.

Rubber Industry in Far East

CEYLON

Nitrite Crumb Rubber

The development of the industrial utilization of nitrite crumb rubber prepared according to the process worked out in Ceylon in conjunction with the staff of the London Advisory Committee shows definite promise, states the 1934 report of the Work of the Rubber Research Board. About the middle of last year amounts increasing from ½ hundred-weight to one ton were sent to England on request of the committee for experimental purposes. The crumb rubber, at first prepared at Culloden Laboratories, is now produced at Dartonfield, but is still made entirely by hand. The use of machinery, however, is under consideration, and it is expected in time to be in a position to manufacture on a commercial scale if the demand requires it.

In England this crumb rubber is being used semi-commercially as an ingredient of a composition for laying white traffic lines and other tests of its value in local roadway construction. The proportion of crumb rubber used in these compositions is small, but the total amount required would be very substantial if the experiments proved successful and the crumb rubber compositions were widely used.

Ceylon Notes

The above report also reads that *Oidium* leaf disease caused more damage in all the main rubber growing districts of Ceylon than in previous years. It is especially noteworthy that the disease was comparatively serious in low-country districts where it has always been supposed climatic conditions were unfavorable to the fungus.

The tapping questionnaire sent out April, 1934, indicates that double-cut systems—especially the so-called double-four system, two cuts on opposite panels every fourth day—are coming into increasing favor. In time these systems may replace the present standard system of a single cut every other day. The double-cut methods have the advantage of reducing tapping costs.

Dissatisfaction with Quota

Now that the quotas first of Siam and more recently of India and Burma have been revised upward, there is noticeable a certain amount of agitation for higher quotas in Ceylon also. It is pointed out that the figures for the area under rubber that have been used as the basis of calculating the quota were those of 1928 when the total area under rubber here was 546,000 acres, whereas at present it is considerably above 600,000 acres. The quota, 79,000 tons for 1935, should be about 100,000 tons.

In a discussion of the matter in the Ceylon State Council it was brought out that India, Burma, and Siam had obtained revisions of quotas because they had the forethought when joining restriction to make the reservation that they should be entitled to revision of quotas if after proper assessment the figures on which quotas were based proved too low. Ceylon, it appears, entered no such reservation; so there seems little likelihood that her quota will be raised.

Siam

Siam is now putting into force her Rubber Restriction Act whereby no rubber may be produced without special coupons or certificates; estates must keep books showing transactions and except in very special cases may not keep double the average quota for a month. Imports of rubber from adjoining countries are to be supervised, and dealers and estates must disclose stocks. Besides no new planting may take place without special permission.

Comments regarding Siam's potential rubber output have usually been rather sceptical. It seems, therefore, worth mentioning the letter of a European planter in Siam in the *Straits Times*. He states the country is passing through the most severe drought experienced in many years' residence there; a great shortage of labor is making things particularly difficult for planters, and in some sections of the country many smaller estates have closed because of lack of labor. He puts the shortage of tappers at between 30 and 40%; tapping rates, he says, are higher in Siam than those received by Indian labor in Malaya. These labor difficulties are largely due to the Government's desire to force the employment of Siamese labor, for which reason, too, the immigration laws are particularly unfavorable. Despite these handicaps rubber exports from Siam were about 2,752 tons in May, he points out.

Siam's exports the first half of 1935 averaged well over 2,000 tons a month. This figure, considering the difficulties mentioned above, would indicate the potential of 40,000 tons a year insisted upon by the Government is no myth and also that the quota of 30,000 tons will be filled, barring, of course, unforeseen circumstances which, in view of the present political conditions in the country, must be allowed for.

NETHERLAND INDIA

Proposed Estate Duty

The special export duty proposed on estate rubber for fiscal purposes continues subject to much adverse criticism. For a time it was felt that the duty, which increases with the rise in price, would create uncertainties and hamper forward selling, which conditions, in turn, would discourage buyers who would go elsewhere for their rubber. Latest reports, however, indicate that the government has found a satisfactory way out of this difficulty so that criticism is now chiefly aimed at the minimum price of 17 guilder cents at which the export duty is payable. It is feared that such a low minimum threatens the existence not only of producers who have done little to lower their costs, but also of those who by the greatest economy have put their enterprises on a sound basis.

The stand of the government, as recently announced, is that in view of the advantages accruing to estates from restriction, a special export duty is fair. Further, there can be no preponderating objection to a duty starting at a price of 17 guilder cents per ½ kilo because a sufficient margin is still left for the proper maintenance of well-managed estates. If this extra duty, however, should cause essentially unremunerative estates to stop tapping at prices which would not permanently be much above 17 cents, the government would not consider this result altogether unwelcome. On the contrary such a result would fit perfectly into the plan of restriction and would help to restore sounder conditions in the industry more rapidly, to the ultimate benefit of the intrinsically healthy estates and the country as a whole.

Planters' Congress

At the West Java Planters' Congress at Bandoeng from June 26 to 28, Dr. Hoedt reviewed the work of the West Java Experiment Station during 1934. At the Tjiomas experimental gardens are 300 regularly controlled clones, and now Pr. 107 has been approved as a superior clone. Here too are buddings from all commercial *Hevea* clones, and the experiment station possesses complete data for identifying the most important clones. Besides there are about 2,000 *Hevea* trees developed from seed obtained by artificial pollination. This seed appears very variable so that there are always great chances of meeting with extremes in the matter of yield capacity. Methods of preparing rubber and latex receive due attention, especially the concentration and creaming of latex.

A.V.R.O.S. Anniversary

June 27 the Algemeene Vereeniging voor Rubberplanters ter Oostkust van Sumatra (General Association for East Coast Sumatra Rubber Planters), better known as A.V.R.O.S., celebrated its silver jubilee. Three years after its founding in 1910 the first consulting expert was appointed, and after three more years it was decided to establish the Algemeen Proefstation. The important results obtained here in both generative and vegetative propagation of *Hevea* are known and appreciated throughout the rubber planting industry. Rubber estates in all rubber centers eagerly buy A.V.R.O.S. selected seed and budwood, and altogether the association has supplied its members over 350,000 meters of budwood and 1,700,000 selected *Hevea* seed.

At the chemical laboratory pioneer work has been done in connection with methods of preparing rubber and concentrating latex; and all kinds of chemicals and manures are tested.

MALAYA

Clone Investigations

It has frequently been stressed that the development of high-grade clones is not an end in itself, but a means to an end: the production of pure clonal seed from which to develop seedling plantations with the high-yielding capacity of the clones, but none of the drawbacks.

Recent investigations would tend to emphasize once more the hazards of working with clones and the need of never-ending caution and patience and courage, particularly the last two. For otherwise how is the investigator to continue in what must often be the disheartening task of discarding clone after clone in the unceasing search for those displaying the desired characteristics?

In a lecture on the "Latest Developments in the Selection of Planting Materials," delivered before the Rantau-Port Dickson branch of the Incorporated Society of Planters, C. E. T. Mann discussed, among others, experiments with clonal seed, results of which led to the conclusion that pure clonal seed did not necessarily reproduce the yielding capacity of the mother tree. On the whole yields from these seedlings were disappointing; in some cases the outputs were little above the average of ordinary estate selected seed, and in only two cases, one Sumatra clone and one clone of the Rubber Research Institute, did the yields approach those of the proved budded clones. But in these two cases, the characteristic persisted whether the clones were crossed with trees of proven or unproven parentage.

New Rubber Factory

Malayan Rubber Works, a new rubber factory, was recently established at Klang. The owner, a prominent Chinese, Towkay Ng Teong Kiat, of Kuala Lumpur, bought the necessary machinery from the liquidators of Tan Kah Kee, Ltd., Singapore. Some of the most skilled workmen from the latter concern are also among the present 260 employes of the new enterprise. Footwear will be the main article manufactured. Though at present the daily output is about 1,000 pairs, it is hoped later to increase this to 5,000 pairs. Besides footwear, cycle tires are now produced, and later automobile tires also will be made.

Reduced Rubber Cess

Apparently the agitation against the excessive taxation of the rubber industry in Malaya has been effective. At any rate a measure of relief is now afforded rubber growers by the Government's decision to reduce the cess on rubber under the Rubber Regulations Enactment of 1934, from 1 cent (Straits currency) per pound to 0.7-cent from July 1, 1935.

Higher Quota for India and Burma

The revised quotas for India and Burma during the remainder of the restriction period follow:

	1935	1936	1937	1938
	Long Tons			
India	12,500	12,500	12,500	13,000
Burma	8,000	8,500	9,000	9,250

The quotas originally had been:

	1935	1936	1937	1938
	Long Tons			
India	8,250	9,000	9,000	9,250
Burma	6,750	8,000	9,000	9,250

From the above it will be seen that while only the 1935 and 1936 quotas of Burma have been affected by the revision and only the 1935 figure has undergone any considerable change, the quotas for India have been raised by around 50%.

British Malaya

An official cable from Singapore to the Malayan Information Agency, Malaya House, 57 Charing Cross, London, S.W.1, England, gives the following figures for July, 1935:

Rubber Exports: Ocean shipments from Singapore, Penang, Malacca, and Port Swettenham

	July, 1935	
To	Sheet and Crepe Rubber Tons	Latex, Concentrated Latex, Revertex, and Other Forms of Latex Tons
United Kingdom	8,464	109
United States	26,643	416
Continent of Europe	7,073	273
British possessions	1,773	42
Japan	3,691	34
Other countries	449	8
Totals	48,093	882

Rubber Imports: Actual, by Land and Sea

	July, 1935	
From	Dry Rubber Tons	Wet Rubber (Dry Weight) Tons
Sumatra	2,555	1,505
Dutch Borneo	2,180	83
Java and other Dutch islands	231	...
Sarawak	1,728	142
British Borneo	482	30
Burma	160	1
Siam	1,358	581
French Indo-China	48	60
Other countries	105	8
Totals	8,847	2,410

China

The Rubber Association of Shanghai has petitioned the Nanking Ministry of Industries to impose restrictions on the local production of rubber goods. The market here is heavily overstocked with rubber manufactures, and business in these articles is suffering accordingly.

Mexico's Tire Imports

United States exports of automobile casings to Mexico numbered 11,987 in the first four months of 1935 as compared with 9,987 in the same period of 1934, an increase of 20%. Total exports of tires to Mexico by principal manufacturing countries totaled 15,579, of which 507 came from Canada, 20 from France, and 3,065 from the United Kingdom. It is believed, however, that a large part of these shipments were tires of the larger sizes for trucks and busses which are not as yet being produced in large quantities in Mexico.

The apparent influence of the Mexican tire manufacturing industry upon exports of tires to that country may be seen by a comparison of statistics for 1929 and 1934. In 1929 tire exports to Mexico numbered 185,959 automobile casings, of which 86% originated in the United States; while in 1934 the total was 34,560, with 78% from the U. S.

Mexican imports of crude rubber reflect this increased tire manufacturing activity, for in 1933 they amounted to 2,006,733 kilos and in 1934 to 2,844,106 kilos. This shows that Mexico is rapidly changing from a country importing large quantities of automobile tires to one which produces the bulk of its own requirements.

U. S. Exports Gain

United States exports of rubber goods the first half of 1935 were valued at $11,010,331, against $10,922,496 in the comparable period of 1934, a gain of about 1%.

Tire exports appear largely responsible for the lack of a greater increase, as they dropped from $6,402,468 to $5,765,077. Other items in which smaller trade losses were registered were rubberized fabrics, declining to $365,970 from $366,211, and rubber sundries and rubber specialties, to $608,351 from $631,197.

All other groups increased in the 1935 period, as follows: rubber footwear, soles and heels, from $290,622 to $490,416, 69%; mechanical rubber goods, $1,385,537 to $1,589,386, 15%; hard rubber goods, $136,357 to $175,681, 29%; semi-manufactured rubber goods, $1,080,767 to $1,152,683, 7%; and other miscellaneous rubber goods, $629,337 to $862,767, 37%. It is especially gratifying to note the increase in exports of rubber footwear, soles, and heels in the face of severe competition in world markets.

Patents and Trade Marks

MACHINERY

United States

2,005,094. **Centrifugal Separator.** H. O. Lindgren, Appelviken, Sweden, assignor to De Laval Separator Co., New York, N. Y.

2,005,787. **Ball Stencil.** W. E. Humphrey, Jeannette, Pa., assignor to Pennsylvania Rubber Co., a corporation of Pa.

2,005,880. **Tire Spreader.** W. M. Anderson, Virginia, Minn.

2,005,888. **Adhesive Article Operator.** M. S. Cate, assignor to Hood Rubber Co., Inc., both of Watertown, Mass.

2,006,121. **Planer Profiling Attachment.** H. A. Tham, assignor to Mechanical Mold & Machine Co., Akron, O.

2,006,307. **Tire Builder.** R. W. Allen, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,007,015. **Coating Device.** W. F. Hafner, Portsmouth, O.

2,007,118. **Temperature Indicator.** G. P. Bosomworth, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,007,280. **Cementer.** S. Mirandette, Haverhill, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

2,007,870. **Tire Spreader.** W. C. Mangel, Monteagle, assignor to B. N. Mulford, Fountain Head, both in Tenn.

2,007,910. **Conveyer.** J. F. Stephens, assignor to Wingfoot Corp., both of Akron, O.

2,007,912. **Fluid - Actuated Controller.** C. W. Bristol, Naugatuck, assignor to Bristol Co., Waterbury, Conn.

Dominion of Canada

350,892. **Tire Builder.** Firestone Tire & Rubber Co. of Canada, Ltd., Hamilton, Ont., assignee of R. W. Allen, Akron, O., U. S. A.

350,907. **Coater.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of C. H. Dennison, Quincy, Mass., U. S. A.

351,042. **Extensible Material Tester.** Dunlop Rubber Co., Ltd., London, assignee of E. Simpson, Birmingham, both in England.

351,141. **Rubber Article Patcher.** W. E. Turner, Yakima, Wash., U. S. A.

351,359. **Golf Ball Coverer.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of H. Z. Cobb, W. Barrington, R. I., U. S. A.

United Kingdom

425,250. **Footwear Assembling Conveyer.** Goodyear's India Rubber Glove Mfg. Co., Naugatuck, assignee of E. L. Patten, New Haven, Conn.

426,203. **Rubber Thread Mold.** L. Landau, London.

426,737. **Collapsible Tire Building Drum.** D. Bridge & Co., Ltd., Castleton. (National Rubber Machinery Co., Akron, O., U. S. A.)

426,824. **Tire Vulcanizer.** L. T. Vogt, Coburg, Victoria, Australia.

427,045. **Rubber Sheet Drier.** E. G. Nisbet and A. L. Drew, both of London. (Socfin Co., Ltd., Kuala Lumpur, Selangor, F. M. S.)

427,155. **Caoutchouc Precipitation Apparatus.** Kodak, Ltd., London.

427,292. **Can Seamer.** G. Wagner, Hannover, Germany.

Germany

615,868. **Rubber Lace Stamper.** Elastics Handelgesellschaft m.b.H., Berlin.

615,994. **Rubber Mill.** Deutsche Dunlop Gummi-Compagnie A. G., Hanau a. M.

PROCESS

United States

2,005,320. **Preparing Chlorinated Rubbers.** E. Konrad and F. Schwerdtel, both of Leverkusen-I. G. Werk, assignors to I. G. Farbenindustrie A. G., Frankfurt a. M., all in Germany.

2,005,360. **Electrical Cable.** C. R. Boggs, Waban, assignor to Simplex Wire & Cable Co., Boston, Mass.

2,005,407. **Impregnated Textile Belting.** A. Abrahamsen and J. E. Hansen, both of Lillesand, Norway.

2,005,637. **Textile Impregnation.** P. Schidrowitz, London, England, assignor, by mesne assignments, to Filastic Holding S. A., Binningen, Switzerland.

2,005,879. **Securing Articles to Display Cards.** R. W. Albright, assignor to American Anode, Inc., Akron, O.

2,006,168. **Annealing Metal Articles.** J. E. Hutchman, Indianapolis, Ind., assignor, by mesne assignments, to United States Rubber Co., New York, N. Y.

2,006,535. **Button Element.** W. C. Broadwell, Forest Hills, N. Y.

2,006,687. **Material.** C. M. Riddock, Andover, assignor of ½ to M. H. Rourke, Boston, both in Mass.

2,006,770. **Adhesively Joining Metal and Wood.** W. L. Jones, Madison, assignor to Roddis Lumber & Veneer Co., Marshfield, both in Wis.

2,006,862. **Articles from Aqueous Rubber Dispersions.** M. E. Hansen, A. Szegvari, and H. A. Morton, assignors to American Anode, Inc., Akron, O.

2,007,548. **Hollow Articles.** R. W. Sampson, assignor to C. J. Hardy, both of New York, N. Y.

2,007,578. **Rubber Manufacture.** E. W. Madge and F. J. Payne, both of Birmingham, assignors to Dunlop Rubber Co., Ltd., London, all in England.

2,007,909. **Pneumatic Tire.** W. C. State, Fairlawn, assignor, by mesne assignments, to Wingfoot Corp., Akron, both in O.

Dominion of Canada

350,888. **Golf Ball.** Dunlop Tire & Rubber Goods Co., Ltd., Toronto, Ont., assignee of D. F. Twiss and F. A. Jones, co-inventors, both of Birmingham, England.

350,906. **Rubber Thread.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, assignee of W. A. Gibbons, Montclair, N. J.

350,970. **Cellulose Sheet Dehydration.** C. F. Brodin, Stockholm, Sweden.

351,331. **Printing Plate.** Bakelite Corp., New York, N. Y., assignee of H. Swan, Upper Montclair, and S. Higgins, Verona, N. J., co-inventors.

351,368. **Bonding Rubber to Steel.** Goodyear Tire & Rubber Co., assignee of R. C. Bateman, both of Akron, O., U. S. A.

351,369. **Latex Goods.** Heveatex Corp., Melrose, Mass., assignee of G. W. Winchester, W. Haven, Conn.

351,370. **Latex Article.** Heveatex Corp., Melrose, assignee of J. B. Crockett, Malden, both in Mass., U. S. A.

351,409. **Tire Bead.** Wingfoot Corp., Wilmington, Del., assignee of J. C. Warden, Akron, O.

351,410. **Tire Bead.** Wingfoot Corp., Wilmington, Del., assignee of L. E. Morrison, New York, N. Y.

United Kingdom

424,784. **Blasting - Cartridge Cooling Sheath.** R. C. Payn and A. G. White, both of Saltcoats, and Imperial Chemical Industries, Ltd., London.

425,729. **Latex Treatment.** G. A. Krause, Munich, and Ges. Fur Linde's Eismaschinen A. G., Hollriegelskreuth, both in Germany.

425,906. **Cable.** Enfield Cable Works, Ltd., and E. Bowden, both of London, and D. O'Duffy, Enfield.

426,226. **Coagulating and Gelling Rubber.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands, and R. F. McKay and J. Kaye, both of Birmingham.

426,669. **Crinkled-Surface Article.** W. Harrison, Midge Hall.

427,131. **Artificial Thread.** R. Pickles, Burnley, and J. Pickles, Fence.

Germany

616,146. **Attaching Valve Patches to Inner Tubes.** Dunlop Rubber Co., Ltd., London, England, and Anode Rubber Co., Ltd., St. Peter's Port, Channel Islands. Represented by R. and M. M. Wirth and C. Weihe, all of Frankfurt a. M., and T. R. Koehnhorn, Berlin.

616,177. **Technical Hose.** Harburger Gummiwaren-Fabrik Phoenix A. G., Harburg-Wilhelmsburg a. E.

616,337. **Condensing Latex by Evaporation.** Metallgesellschaft A. G., Frankfurt a. M.

CHEMICAL

United States

19,612 (Reissue). **Coating Composition.** W. Koch, assignee to Hercules Powder Co., both of Wilmington, Del.

2,004,956. **Plastic Composition.** J. J. Martin, Brooklyn, assignor to Bell Telephone Laboratories, Inc., New York, both in N. Y.

2,005,022. **Carbon Black.** E. H. Damon, Skellytown, assignor, by mesne assignments, to Cabot Carbon Co., Pampa, both in Tex.

2,005,382. **Electrical Insulation.** J. McGavack, Leonia, and R. F. Tefft, Nutley, both in N. J., assignors, by mesne assignments, to United States Rubber Co., New York, N. Y.

2,006,003. **Accelerator.** W. Schoeller, Berlin-Westend, H. G. Allardt, Berlin-Reinickendorf-West, and A. Feldt, Berlin-Charlottenberg, assignors to Schering-Kahlbaum A. G., Berlin, all in Germany.

2,006,057. **Accelerator.** A. J. Northam, assignor to E. I. du Pont de Nemours & Co., both of Wilmington, Del.

2,006,184. **Rubber Treatment.** W. Schrauth, Berlin-Dahlem, Germany, assignor, by mesne assignments, to "Unichem" Chemikalien Handels A.-G., Zurich, Switzerland.

2,006,211. **Colored Rubber Product.** E. Fischer, Frankfurt a. M.-Hochst, Germany, assignor to General Aniline Works, Inc., New York, N. Y.

2,006,310. **Rubber Compounding.** A. B. Cowdery, Needham, Mass., assignor to Barrett Co., New York, N. Y.

2,006,841. **Artificial Rubber Dispersion.** E. G. Partridge, Stow, O., assignor to B. F. Goodrich Co., New York, N. Y.

2,007,335. **Accelerator.** H. A. Lubs, J. E. Cole, and A. L. Fox, assignors to E. I. du Pont de Nemours & Co., all of Wilmington, Del.

2,007,802. **Paint.** S. Jacobs, Comstock, Mich.

Dominion of Canada

350,870. **Antioxidant.** Canadian Industries, Ltd., Montreal, P. Q., assignee of I. Williams and A. M. Neal, coinventors, both of Woodstown, N. J.

350,874. **Accelerator.** Canadian Industries, Ltd., Montreal, P. Q., assignee of I. Williams, Carneys Point, N. J.

350,887. **Plastic and Elastic Material.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of S. D. Shinkle, Passaic, N. J., U. S. A.

351,389. **Paintable Composition.** Shawinigan Chemicals, Ltd., Montreal, P. Q., assignee of F. W. Skirrow, Purley, and S. Whyte, Red Hill, coinventors, both in England.

351,412. **Age Resister.** Wingfoot Corp., Wilmington, Del., assignee of A. M. Clifford, Stow, O., both in the U. S. A.

United Kingdom

425,751. **Stabilizing Creamed Latex.** International Latex Processes, Ltd., St. Peter's Port, Channel Islands.

425,769. **Chlorinated Rubber.** Deutsche Gold- Und Silber-Scheideanstalt Vorm. Roessler, Frankfurt a. M., Germany.

425,839. **Coloring Rubber.** I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.

425,843. **Rubber Composition.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)

425,941. **Coating Composition.** R. F. McKay, Birmingham. (International Latex Processes, Ltd., St. Peter's Port, Channel Islands.)

426,265. **Adhesive.** J. Y. Johnson, London. (I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.)

426,346. **Photographic Bleaching-out Layer.** I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.

426,402. **Treating Rubber.** R. F. McKay, Birmingham. (International Latex Processes, Ltd., St. Peter's Port, Channel Islands.)

426,565. **Isomerized Rubber.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.

426,649. **Accelerator.** J. R. Ingram, Nitro, W. Va., and Rubber Service Laboratories Co., Akron, O., both in the U. S. A.

426,708. **Polymerized Chlor-Butadienes.** International General Electric Co., Inc., New York, N. Y., U. S. A., assignee of Allgemeine Elektricitäts-Ges., Berlin, Germany.

426,732. **Colloidal Fuel.** J. L. Strevens and K. G. S. Hatfield, both of London.

426,745. **Softening Rubber.** Deutsche Hydrierwerke A. G., Berlin, Germany.

426,757. **Preserving Rubber.** Dunlop Rubber Co., Ltd., London, and D. F. Twiss, J. A. Wilson, and A. E. T. Neale, all of Birmingham.

426,836. **Latex Composition.** Electrical Research Products, Inc., New York, N. Y., assignee of J. H. Ingmanson, Rahway, N. J., both in the U. S. A.

Germany

616,147. **Rubber Compound.** Robert J. King Co., Inc., Stamford, Conn., U. S. A. Represented by H. Joseph, Berlin.

616,364. **Chlorinated Rubber Derivatives.** I. G. Farbenindustrie A. G., Frankfurt a. M.

GENERAL

United States

2,004,922. **Vehicle Twin Tire Construction.** P. M. Bourdon, Paris, assignor to Michelin & Cie., Clermont-Ferrand, both in France.

2,004,973. **Porous Separator.** A. S. Behrman, assignor to A. S. Behrman, trustee of Porous Rubber Products Trust, both of Chicago, Ill.

2,004,985. **Beach Garment.** C. M. Hogan, Chicago, Ill.

2,005,003. **Wheel Holder.** L. J. Patton and H. J. Terrill, both of Benton Harbor, Mich.

2,005,072. **Breathing Mask.** L. Y. Booharin, San Francisco, Calif., assignor of 1/3 to W. H. Lea and 1/3 to B. Werner.

2,005,088. **Doll.** A. M. Katz, assignor to Ideal Novelty & Toy Co., both of Brooklyn, N. Y.

2,005,091. **Bottle Cap and Spreader.** W. E. Kuenstler, Grantwood, N. J.

2,005,092. **Bottle Dispenser.** A. Kuhn and C. H. Heitman, both of New York, N. Y.; said Heitman assignor to A. D. Reid, Weehawken, N. J.

2,005,103. **Motor Vehicle.** A. Moorhouse, assignor to Packard Motor Car Co., both of Detroit, Mich.

2,005,114. **Dental Model.** B. L. Spitzer and A. Benko, both of New York, N. Y.

2,005,115. **Golf Ball Washer and Drier.** J. C. Stutz, Kansas City, Mo.

2,005,116. **Sliding Fastener.** J. Franze, Liestal, Switzerland.

2,005,135. **Heel Carton.** A. A. Esterson, assignor to Cat's Paw Rubber Co., Inc., both of Baltimore, Md.

2,005,139. **Expansion and Contraction Joint.** A. C. Fischer, Chicago, Ill., assignor to Philip Carey Mfg. Co., a corporation of O.

2,005,170. **Traffic Marker.** G. Segelhorst, Stow, O.

2,005,177. **Shoe Press Pad.** W. C. Card, Jr., Winthrop, Mass., assignor to Compo Shoe Machinery Corp., New York, N. Y.

2,005,259. **Oil Saver.** W. R. Guiberson, assignor to Guiberson Corp., both of Dallas, Tex.

2,005,273. **Submarine Signaling Cable.** E. Studt, assignor to Norddeutsche Seekabelwerke A.-G., both of Nordenham, Germany.

2,005,275. **Battery Plate Insulator.** T. A. W. Thomas, Los Angeles, Calif.

2,005,287. **Washing Machine.** C. T. Childers, Galesburg, Ill.

2,005,302. **Car Wheel.** C. Saurer, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,005,318. **Receptacle Closure.** H. Ingram, Brooklyn, N. Y.

2,005,340. **Seal.** G. M. Jaffin and J. T. Basseches, both of New York, N. Y.

2,005,437. **Nipple.** H. D. Naum, Brooklyn, N. Y.

2,005,446. **Grease Seal.** J. R. Winter, Detroit, Mich., assignor of ½ to H. A. Montgomery.

2,005,460. **Safety Bathing Suit.** J. Fried, New York, N. Y.

2,005,520. **Comb Cleaning Attachment.** O. Friedmann, Vienna, Austria.

2,005,531. **Lampshade Cover.** S. J. Brandstein, Brooklyn, N. Y.

2,005,581. **Windshield Wiper and Heater.** E. B. Gary and E. A. Ebert, both of Buffalo, N. Y.

2,005,608. **Footwear Apparatus.** W. H. Bresnahan, Lynn, Mass., assignor, by mesne assignments, to Compo Shoe Machinery Corp., New York, N. Y.

2,005,610. **Sole Affixer.** W. C. Card, Jr., Waverly, Mass., assignor to Compo Shoe Machinery Corp., New York, N. Y.

2,005,612. **Foundation Garment.** K. E. Cunningham, assignor to I. Newman & Sons, Inc., both of New Haven, Conn.

2,005,614. **Cable.** J. Fassbender, assignor to Land & Seekabelwerke A. G., both of Cologne-Nippes, Germany.

2,005,616. **Sole Affixer.** E. T. Franzen, Maplewood, and A. J. Weiss, W. Orange, both in N. J., assignors to Compo Shoe Machinery Corp., New York, N. Y.

2,005,621. **Shoe Pressure Applier.** O. Habicht, Frankfurt a. M., Germany, assignor to Compo Shoe Machinery Corp., New York, N. Y.

2,005,622. **Hose Supporter.** M. Hawie, Greens Farms, Conn.

2,005,626, 2,005,627, and 2,005,628. **Aircraft Landing Wheel.** A. G. Maranville, assignor to General Tire & Rubber Co., both of Akron, O.

2,005,630. **Cemented Floor Covering Remover.** W. E. Overell, Flintridge, Calif.

2,005,659. **Mat.** E. C. Matteson, assignor of ¼ to W. F. A. Buehner and ¼ to A. M. Moore, all of Miami, Fla.

2,005,676. **Tape and Gauze Package.** B. H. Hanover, assignor to Kendall Co., both of Chicago, Ill.

2,005,754. **Shoe Bottom Pressure Applier.** R. N. Sandberg, Beverly, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

2,005,755. **Shoe Bottom Pressure Applier.** F. J. Better, Beverly, Mass., assignor to United Shoe Machinery Corp., Paterson, N. J.

2,005,825. **Weatherstrip.** J. J. Sheppard, Flint, Mich.

2,005,838. **Vehicle Shock Absorber.** L. A. Bartlett, Pittsburgh, Pa.

2,005,841. **Clasp.** H. W. Kulp and M. C. Dellinger, assignors to K-D Mfg. Co., all of Lancaster, Pa.

2,005,934. **Elastic Cushion Mounting.** A. G. Carter, Grand Rapids, Mich.

2,006,005 and 2,006,006. **Windshield Heater.** M. Zaiger, Swampscott, Mass.

2,006,038. **Tire.** M. Yamaki, Sanno, Japan.

2,006,042. **Seal.** E. Dietze, Richmond Hill, assignor to American Casting & Mfg. Corp., Brooklyn, both in N. Y.

2,006,122. **Windshield Defroster.** B. Weller, Midwest, Wyo.

2,006,137. **Golf Practice Device.** A. D. Grisso, Fort Worth, Tex.

2,006,197. **Pneumatic Tire.** E. S. Ewart, St. Clair Shores, and A. W. Bull, Grosse Pointe, both in Mich., assignors to United States Rubber Co., New York, N. Y.

2,006,230. **Ball.** E. J. Dobbins, assignor to Googly, Ltd., both of London, England.

2,006,239. **Ignition Coil Construction.** A. J. Gogel, assignor to Electric Auto-Lite Co., both of Toledo, O.

2,006,303. **Flexible Connection.** C. Saurer, assignor to Firestone Tire & Rubber Co., both of Akron, O.

2,006,308. **Grinding Wheel.** A. O. Bush and R. H. Martin, assignors to Norton Co., all of Worcester, Mass.

2,006,315. **Tire.** E. Hopkinson, assignor, by mesne assignments, to United States Rubber Co., both of New York, N. Y.

2,006,322. **Windshield Cleaner Blade.** E. C. Horton, Hamburg, assignor to Trico Products Corp., Buffalo, both in N. Y.

2,006,323. **Windshield Cleaner.** E. C. Horton, Hamburg, assignor to Trico Products Corp., Buffalo, both in N. Y.

2,006,358. **Spring Nipple Clamp.** Y. H. Kurkjian, Paterson, N. J., assignor to C. Schmid, New York, N. Y.

2,006,364. **Inking Roller.** L. H. Morse, Cleveland, O., assignor to Multigraph Co., a corporation of Del.

2,006,371. **Hydraulic Hat Press.** M. A. Schwartz, assignor of ½ to G. Cheroff, both of Los Angeles, Calif.

2,006,381. **Gasket.** C. B. Bailey, Wyandotte, assignor to McCord Radiator & Mfg. Co., Detroit, both in Mich.

2,006,409. **Vehicle Frame Pneumatic Support.** H. H. Robinson, assignor to Curtiss Aerocar Co., Inc., both of Coral Gables, Fla.

2,006,415. **Display Box.** M. Simon, assignor to I. B. Kleinert Rubber Co., both of New York, N. Y.

2,006,467. **Liquid Dispenser.** F. Lobl, Middleboro, Mass.

2,006,495. **Railway Vehicle Guide Flange.** P. M. Bourdon, Paris, assignor to Michelin & Cie., Clermont-Ferrand, both in France.

2,006,602. **Packing.** G. F. Muster, Elmhurst, N. Y.

2,006,644. **Spring Mounting.** O. F. Lundelius and M. N. Lefler, assignors to Lundelius & Eccleston Motors Corp., all of Los Angeles, Calif.

2,006,673. **Ice Carrier.** W. F. Crawford, Waco, Tex.

2,006,707. **Key Holder.** S. F. Bashara, Houston, Tex.

2,006,789. **Shock Absorber.** W. A. Chryst, Dayton, O., assignor, by mesne assignments, to General Motors Corp., Detroit, Mich.

2,006,808. **Smoking Pipe.** S. Kanter, Chicago, Ill.

2,006,861. **Ball.** J. H. Grady, assignor to J. H. Grady Mfg. Co., both of St. Louis, Mo.

2,006,971. **Liquid Container.** J. L. J. R. Verdini, Mortain, France.

2,007,048. **Float Valve.** J. F. Goodwin, Sarnia, Ont., Canada, assignor of ¼ to H. R. Goodwin, Detroit, Mich.

2,007,067. **Curtain Stretcher Tool.** M. R. Yarger, assignor of 30% to W. L. Randolph, both of Morgantown, W. Va.

2,007,078. **Pile Fabric.** L. L. Crabtree, Bridgeport, Conn., assignor, by mesne assignments, to Saltex Looms, Inc.

2,007,079. **Swimming Glove.** G. W. Cushman, E. Jamaica, Vt.

2,007,093. **Battery Separator.** M. H. Martindell, assignor to Jos. Stokes Rubber Co., both of Trenton, N. J.

2,007,107. **Soap and Massage Article.** D. H. Bottrill, Montreal, P. Q., Canada.

2,007,152. **Roller Bearing.** H. D. Allee, assignor to Bantam Ball Bearing Co., both of S. Bend, Ind.

2,007,162. **Milking Machine Teat Cup.** C. H. Hapgood, Nutley, N. J., assignor to De Laval Separator Co., New York, N. Y.

2,007,206. **Electric Lamp Receptacle.** J. N. McTwiggan, United States Navy.

2,007,238. **Cleaner.** E. H. Anderson, Yonkers, N. Y.

2,007,404. **Decalcomania Paper.** J. MacLaurin, Ware, Mass.

2,007,440. **Air Mask.** H. A. Brand, Michigan City, Ind.

2,007,454. **Ampoule.** H. N. May, Chicago, Ill.

2,007,494. **Parachute.** G. G. Coleman, assignor of ½ to O. R. Dixon, both of County Line, Okla.

2,007,549. **Antisqueak Strip.** R. W. Springer, Detroit, Mich.

2,007,568. **Blasting Plug.** R. J. Heitzman, assignor of ¼ to W. E. Ressler, both of Shamokin, Pa.

2,007,576. **Fountain Pen.** C. K. Lovejoy, Roslindale, Mass.

2,007,630. **Decalcomania Paper.** H. Atwater, Bryn Mawr, Pa., assignor to McLaurin-Jones Co., Brookfield, Mass.

2,007,724. **Tire.** S. Palli, Turin, Italy.

2,007,740. **Box.** W. E. Brelsford, Mendota, Ill.

2,007,761 and 2,007,762. **Electrical Cable.** F. R. Kaimer, Bridgeport, Conn., assignor to General Electric Co., a corporation of N. Y.

2,007,803. **Filling Nipple and Stopper.** P. Kelly, New York, N. Y.

2,007,825. **Vented Rubber Article.** R. B. Day, Akron, O., assignor, by mesne assignments, to Wingfoot Corp., Wilmington Del.

2,007,832. **Snubber.** T. E. Nelson, assignor to V. E. Nelson, both of Pontiac, Mich.

2,007,867. **Respiratory Mask.** J. E. Le Duc, Outremont, P. Q., Canada.

2,007,895. **Hair Net Cap.** S. F. Kayn, New York, N. Y., assignor to Delamere Co., Inc., a corporation of Del.

2,007,916. **Retractable Valve Stem.** E. C. Kastner, Fairlawn, assignor to Wingfoot Corp., Akron, both in O.

2,007,918. **Conduit.** H. E. Morse, assignor to Wingfoot Corp., both of Akron, O.

2,007,949. **Shoe Heel Breast Buffer.** P. Lauretti, assignor of ½ to C. A. Wardecker, both of Carlisle, Pa.

Dominion of Canada

350,784. **Packing.** J. W. Watson, Wayne, and R. F. Nowalk, Philadelphia, co-inventors, both in Pa.

350,786. **Horseshoe.** S. Wallace and I. Spigel, co-inventors, both of Toronto, Ont.

350,789. **Wheel.** F. W. Baker, Stourbridge, England.

350,795. **Surgical Dressing.** O. De Muth, Vancouver, B. C.

350,802. **Tobacco Smoke Filter.** L. G. Gautron, Geneva, Switzerland.

350,805. **Foot Appliance.** H. J. Gluckman, New York, N. Y., U. S. A.

350,820. **Impregnated Material.** J. C. Patrick, Trenton, N. J., U. S. A.

350,886. **Interchangeable Tire Valve.** Dominion Rubber Co., Ltd., Montreal, P. Q., assignee of E. Eger, Detroit, Mich., U. S. A.

350,898. **Cushioning Mechanism.** Gould Coupler Co., New York, assignee of D. S. Barrows, Rochester, both in N. Y., U. S. A.

350,931. **Shoe Part Treater.** United Shoe Machinery Co. of Canada, Ltd., Montreal, P. Q., assignee of C. G. Brostrom, Lynn, Mass., U. S. A.

350,960. **Floor Plate.** E. E. Moore, Chicago, Ill., U. S. A.

350,972. **Stocking and Foot Protector.** W. H. Bunker, Toronto, Ont.

350,992. **Nursing Bottle.** E. Légaré, Hull, P. Q.

350,996. **Support.** H. C. Lord, Erie, Pa., U. S. A.

351,007. **Shoe.** F. Vicente, Habana, Cuba.

351,009. **Valve Stem.** F. H. Watson, Jonesboro, Ark., U. S. A.

351,019. **Undergarment.** B.V.D. Co., Inc., New York, assignee of R. E. Heyn, Bronxville, both in N. Y., U. S. A.

351,058. **Fastener Slider.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of G. Sundback, Meadville, Pa., U. S. A.

351,123. **Sphygmomanometer.** F. Cossor, London, England.

351,189. **Slide Fastener.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of G. Sundback, Meadville, Pa., U. S. A.

351,190. **Separable Fastener.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of H. E. Sipe, New York, N. Y., U. S. A.

351,191. **Separable Fastener.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of G. Sundback, Meadville, Pa., U. S. A.

351,192. **Fastener Slider Moving Device.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of S. H. Norton, Meadville, Pa., U. S. A.

351,193. **Fastener.** Lightning Fastener Co., Ltd., St. Catharines, Ont., assignee of H. E. Sipe, New York, N. Y., U. S. A.

351,278. **Inner Tube.** C. Bradley, Nashville, Tenn., U. S. A.

351,282. **Ball.** M. Caro, Theux, Belgium.

351,306. **Tennis Racquet Casing and Press.** R. W. Leisner, Voksenlia, Norway.
351,310. **Railway Truck.** E. H. Piron, Detroit, Mich., U. S. A.
351,311. **Scalp Band.** H. R. Priest, Loudonville, O., U. S. A.
351,316. **Shoe.** W. J. Sisman, Aurora, Ont.

United Kingdom

424,213. **Loom Reed.** W. Longbottom, (trading as J. Whitwham), Bingley, and J. Horsman, Brighouse.
424,225. **Wearing Apparel.** S. D. Barney, London.
424,233. **Pipe Joint.** B. F. Goodrich Co., New York, N. Y., U. S. A., assignee of T. D. Nathan.
424,247. **Electric Heater.** K. Loysch, Pielach, Austria.
424,293. **Conductor Antitangling Sheath.** T. V. Boardman, London.
424,326. **Trouser Waistband.** C. Joseph, Harehills.
424,364. **Cable End Sleeve.** British Thomson-Houston Co., Ltd., London, assignee of Allgemeine Elektricitäts-Ges., Berlin, Germany.
424,427. **Wheel.** E. Capo, Turin, Italy.
424,432. **Knitting Registering Device.** I. Keizer and R. N. Langbart, both of London.
424,451. **Inflating Valve.** J. Rothwell, Bury.
424,458. **Universal Joint.** Soc. Italiana Pirelli, Milan, Italy.
424,471. **Garter.** A. Galves, Oran, Algeria
424,553. **Cynanide Solution Aerator.** E. A. Knapp and W. R. Bates, both of London.
424,556. **Centrifugal Pump.** Bolidens Gruvaktiebolag, Stockholm, Sweden.
424,580. **Plate Heat Exchanger.** J. Stone & Co., Ltd., London, and F. J. Pike, Addiscombe.
424,587. **Artificial Denture.** R. Edwards, Scarborough.
424,599. **Surgical Syringe.** H. G. Reade, Somerset.
424,621. **Electric Lamp Cap.** British Thomson-Houston Co., Ltd., London, assignee of H. D. Blake, Cleveland Heights, and W. J. Geiger, Cleveland, both in O., U. S. A.
424,651. **Hot Water Bottle Cover.** Quilt Manufacturers, Ltd., and P. Taylor, both of Manchester.
424,678 and 424,679. **Vehicle Spring Suspension.** Daimler-Benz A. G., Stuttgart, Germany.
424,683. **Yarn Apparatus.** British Celanese, Ltd., London, and W. I. Taylor, F. C. Hale, and A. H. Woodruff, all of Spondon.
424,687. **Windscreen Cleaner.** Vauxhall Motors, Ltd., Luton, W. O. Kennington, London, H. Drew, Luton, and W. W. Constantine and W. S. Ascough, both of London.
424,693. **Vacuum Cleaner.** Abingdon Works (1931), Ltd., T. B. Bramley, and J. Gray, all of Birmingham.
424,695. **Railway Wheel.** Owen & Dyson, Ltd., and W. T. Coleman, both of Rotherham.
424,703. **Aircraft Shock Absorber.** A. Nasbet, Sunderland.
424,712. **Horseshoe.** E. Sanderson, Rochdale.
424,726. **Friction Lining.** A. H. Stevens, London. (Raybestos Co., Bridgeport, Conn., U. S. A.)
424,738. **Pneumatic Tire.** Michelin & Cie., Puy-de-Dome, France.
424,742. **Lacrosse Stick.** J. Muir, Outremont, P. Q., Canada.
424,744. **Elastic Thread.** United Elastic Corp., Easthampton, Mass., U. S. A.
424,749. **Colonic Irrigator.** J. D. Allen, New York, N. Y., U. S. A.
424,752. **Yarn Apparatus.** British Celanese, Ltd., London, and W. I. Taylor, F. C. Hale, and A. H. Woodruff, all of Spondon.
424,766. **Pad.** A. Skipsey, St. Albans.
424,767. **Driving Belt.** Goodyear Tire & Rubber Co., Akron, O., U. S. A.
424,772. **Puzzle.** T. W. Cocks, London.
424,848. **Moving Sign.** J. D. Nixon and Masters & Andren, Ltd., both of London.
424,868. **Photographic Developer.** S. Sokal, London. (Kalle & Co., A. G., Biebrich-on-Rhine, Germany.)
424,896. **Shirt.** N. Blond, Manchester.
424,947. **Label Printer.** S. Elvey, London.
424,948. **Retractive Switch.** Bosch A. G., Stuttgart, Germany.
424,969. **Screw Propeller.** F. Friedenthal, Ashton-on-Ribble, G. I. Murray, Stockport, and W. Turner, Eccles.
424,978. **Roulette Apparatus.** J. Barker, Roundhay.
424,998. **Feather Cleaner.** T. Wuringer, Vienna, Austria.
425,050. **Poultry Plucker.** J. B. Kingdon, London.
425,066. **Body Armor.** R. Dworaczek, Vienna, Austria.
425,077. **Kinematograph Apparatus.** W. Scupin, Silesia, Germany.
425,082. **Sanitary Trap.** P. V. Lomas, London.
425,088. **Catamenial Appliance.** M. E. Rabell, Pelham Manor, N. Y., U. S. A.
425,089. **Driving Belt.** P. J. Gadenne, Monsen-Baroeul, France.
425,125. **Roller.** B. D. Baker and Baker Perkins, Ltd., both of Peterborough.
425,135. **Babies' Napkin.** R. F. Raven and H. A. Raynor, both of Nottingham.
425,138. **Reflector.** Bluemel Bros., Ltd., and F. W. Bluemel, both of Coventry.
425,147. **Dryer.** J. Van Liempt, Krefeld, Germany.
425,185. **Rupture Pad.** J. E. Bush, Keighley.
425,213. **Brassiere.** J. P. Boiardi, London.
425,246. **Stenciling Apparatus.** C. W. Earle, Kew, Victoria, Australia.
425,260. **Stocking Suspender.** A. G. Waterhouse, Goodmayes.
425,408. **Radioactive Hot Water Bottle.** R. W. Lawson, London.
425,441. **Pipe Welder.** British Thomson-Houston Co., Ltd., London.
425,493. **Discharge Apparatus.** General Electric Co., Ltd., London, and L. C. Jesty, Wembley.
425,502. **Printing Machine.** Kalamazoo-Print, Ltd., F. L. Impey, and A. G. Rendall, all of Birmingham.
425,508. **Garment Pad.** Workwear, Ltd., and G. McNeill, both of Liverpool.
425,557. **Web Feeder.** A. S. Brown and J. Dalglish, both of Glasgow, Scotland.
425,558. **Telephone Receiver.** A. Graham & Co., Ltd., London, and C. H. Vaughan, St. Mary's Cray.
425,608. **Catamenial Appliance.** P. L. Paterson, London.
425,661. **Arch Support.** J. F. Arnold and A. Williams, both of London.
425,676. **Crutch.** E. F. Masters, London.
425,703. **Electrolytic Cell.** D. J. Evans, Tonbridge.
425,797. **Surgical Pad.** F. J. Rafferty and J. Atchison, both of Londonderry, Northern Ireland.
425,829. **Gasogen.** Sparklets, Ltd., and W. Brewer, both of London.
425,902. **First-Aid Kit.** A. Davies, Swansea.
425,965. **Interrectal Radiography.** B. Sabot, Warsaw, Poland.

Germany

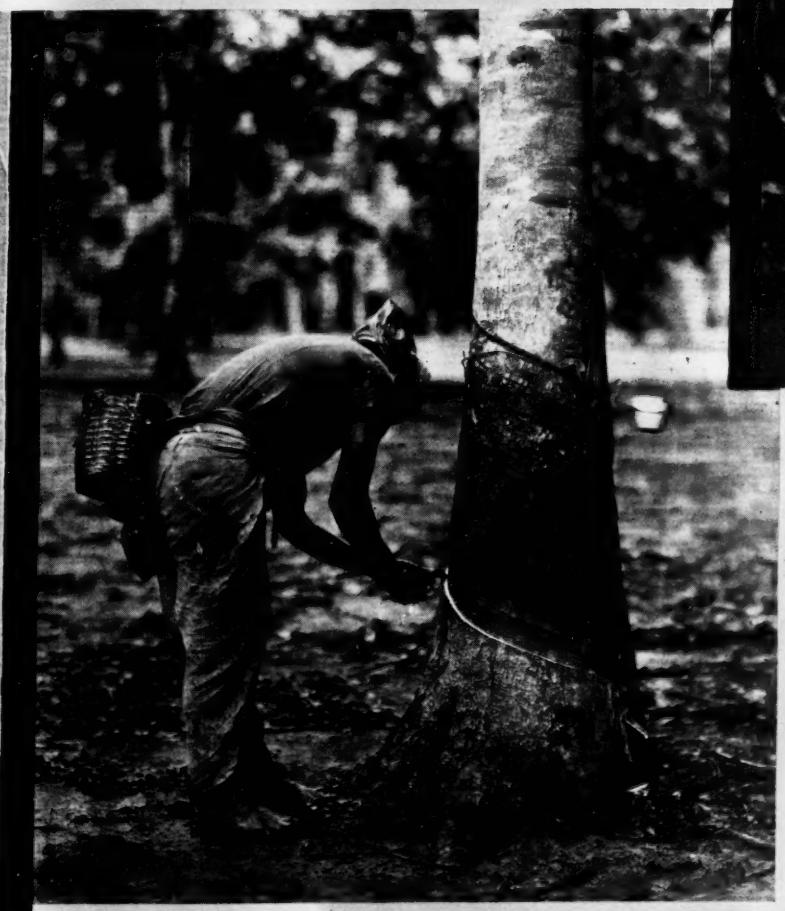
615,865. **Vehicle Tire Cover.** A. Berchtold, Oerlikon, Switzerland. Represented by C. Schmidtlein and E. Splanemann, both of Berlin.

TRADE MARKS

United States

325,261. **Flexo grid.** Ice tray removable partitions. Inland Mfg. Co., Dayton, O.
325,280. Circle containing the letters: **"GW."** Sporting and athletic goods. Great Western Athletic Goods Co., Chicago, Ill.
325,296. **Hi-Speed.** Tennis balls, etc. E. P. Juneman Corp., Chicago, Ill.
325,315. **Parabutol.** Plasticizing and softening agents for chlorinated rubber, etc. I. G. Farbenindustrie A. G., Frankfurt a. M., Germany.
325,328. Representation of a foot, and the word: **"Cropax."** Medicated pads and fabrics and feet medicaments. Forest City Rubber Co., Cleveland, O.
325,443. **Resolute.** Batteries. Goodyear Tire & Rubber Co., Inc., Akron, O.
325,489. Oval containing the word: **"Balloon."** Windshield wiper blades. Rex-Hide, Inc., E. Brady, Pa.
325,495. Fanciful design containing the word: **"Auto-Lec."** Inner tubes. Auto-Lec Stores, Inc., New Orleans, La.
325,536. **Rite-flex.** Corsets and brassieres. Rite Form Corset Co., Inc., New York, N. Y.
325,575. **Galecoat.** Raincoats, etc. Alligator Co., St. Louis, Mo.
325,617. Fanciful label containing the letter: **"M"** and the word: **"McClaren."** Tires and tubes. McClaren Rubber Co., Charlotte, N. C.
325,647. **Hewprene.** Hose or tubing. Hewitt Rubber Corp., Buffalo, N. Y.
325,669. **Vitalic.** Battery containers. Continental Rubber Works, Erie, Pa.
325,703. Representation of a piece of elastic fabric. Narrow elastic fabrics. Narrow Fabric Co., Reading, Pa.
325,705. **Squeegee.** Machinery packing. Henrite Products Corp., Ironton, O.
325,735. **Snugtex.** Elastic webbing textile piece goods. Everlastik, Inc., Chelsea, Mass.
325,775. Seal containing the letters: **"SR."** Balls. Seamless Rubber Co., Inc., New Haven, Conn.
325,827. **Solid Arch.** Machinery packing. Henrite Products Corp., Ironton, O.
325,840. **Sealtyte.** Inner tubes and valve stems. Firestone Tire & Rubber Co., Akron, O.
325,923. Representation of a spinning wheel. Bath mats, etc. James McCutcheon & Co., New York, N. Y.

Great Moments IN THE *Rubber Industry*



(Above) Old method of tapping rubber tree. (Below) New single cut method.

When the modern super-mileage tire was created by advancing the proportion of MICRONEX to the present loading of about 50%, and mileage increased to 25,000 or more.

MICRONEX

THE MASTER COLLOID

Beads or Compressed

BINNEY & SMITH CO.

41 EAST 42D ST., NEW YORK

COLUMBIAN CARBON CO.

Micronex Beads

This, the pioneer spherical, free-flowing pellet black, was the result of years of planned research. The following conditions were held essential:

1. **The carbon black must be pure (containing no foreign matter).**
2. **It must be "compact and dense" to save freight charges.**
3. **It must retain its form during shipment to all parts of the world.**
4. **It must disperse readily and completely in normal rubber processing.**
5. **It must handle and flow easily to facilitate weighing out and handling to and into the mills.**
6. **It must retain unimpaired all of the reinforcing and vulcanizing properties of Standard Micronex.**

By 1927 these objectives had been achieved. Spherical pellets of pure carbon had been produced by agitation and impact. Rubber tests had confirmed their quality. By 1930 operations had been transferred from pilot plant to Louisiana, and commercial shipments begun, domestic and export. In 1932 sales had increased 45% over 1931; 1933 increase was 310%; 1934 increase was 380%; 1935 to date is 430%.

Such, in epitome, is the story of one of the pioneering contributions by the Makers of Micronex.

●

BINNEY & SMITH CO.
Research and Development Department

Micronex Beads are Fully Protected by Basic Patents

Binney & Smith
MASTER COLLOID

MICRONEX MEANS MORE MILEAGE

Market Reviews

CRUDE RUBBER

Commodity Exchange

TABULATED WEEK-END CLOSING PRICES

Futures	June 29	July 27	Aug. 3	Aug. 10	Aug. 17	Aug. 24
July ..	12.48	11.71	.....	.....	.....	.....
Aug. ..	12.53	11.76	12.13	11.93	11.83	12.02
Sept. ..	12.58	11.82	12.22	12.01	11.88	12.05
Dec. ..	12.80	12.03	12.37	12.21	12.03	12.25
Mar. ..	13.02	12.24	12.66	12.43	12.29	12.46
June ..	.....	12.42	12.83	12.61	12.49	12.65
July ..	.....	.....	12.90	12.67	12.55	12.72
Volume for week (tons)	19,600	8,700	9,490	6,540	7,350	10,910

THE above table gives the nearest first and last week-end closing prices of the month previous to that just closed, also the week-end closing prices of each week of last month up to time of going to press. This plan sets forth the general price trends in the briefest manner possible.

The lethargy of trading in July coupled with the lack of stimulating news caused the downward trend of prices that began about mid-June to continue throughout July, but at a more moderate rate. Prices made a net recession during that month of only 12 to 15 points. The International Rubber Regulation Committee report showed declines in exports of rubber from all producing countries in June as against May.

August began with a few days of moderate price rises because of slightly increased activity of some manufacturers. This condition was soon reversed by the weakness of the guilder and the resignation of the Dutch Cabinet, with possibilities of monetary collapse. Fluctuations, usually not wide, with a slightly downward trend characterized the rather limited trading most of the month. The lowest point was reached August 19 when the August contract closed at 11.77¢. Following that date activity of trading increased, and prices improved rather sharply, bringing the August contract to 12¢, August 22. Manufacturing became more active, particularly in lines other than tires, and an atmosphere of optimism seemed to prevail because of the favorable fall and winter business outlook and as it is realized that business has remained quite stable despite the summer season and disturbing political activities.

The British Association of Stockholders of Rubber Corporations is said to have suggested the creation of a sales organization to cooperate with I.R.R.C. to raise prices, but it seems doubtful if such action will be taken as the operating plan is virtually that of a pool, and such experiences with various commodities have not worked out so well.

It has also been reported that the Malayan export allowances might be increased from the present 65% basis to 70% during the last quarter of 1935. The Reuters Trade News Service announced that an emergency ordinance will be issued in October for duties beginning January 1, 1936, that will vary according to the Batavia price for standard sheet as follows: (1) no duty when price below 17¢ per half kilogram; (2) from 17¢ but under 18¢ a duty of ½¢ per half kilogram; (3) from 18¢, but under 20¢, a duty of 1¢; (4) for every rise of 1¢ over 20¢, an additional ¼¢ duty will be levied. A later cable stated this ordinance will be discussed before the present Peoples' Council.

New York Outside Market

The price of No. 1 smoked sheets began July in the region of 12½¢ and gradually declined during the very inactive period to lows of 11¾¢ July 24 and closed the month at 12⅛¢. The week-end prices during July and August follow: June 29, 12½¢; July 6, 12⅛¢; July 13, 12⅛¢; July 20, 12¢; July 27, 11⅛¢; August 3, 12¼¢; August 10, 11¾¢; August 17, 11⅞¢; and August 24, 12⅛¢. Factory demand during August was for the most part low, becoming more active about the twentieth as production expanded and as prospects for increased fall and winter business grew.

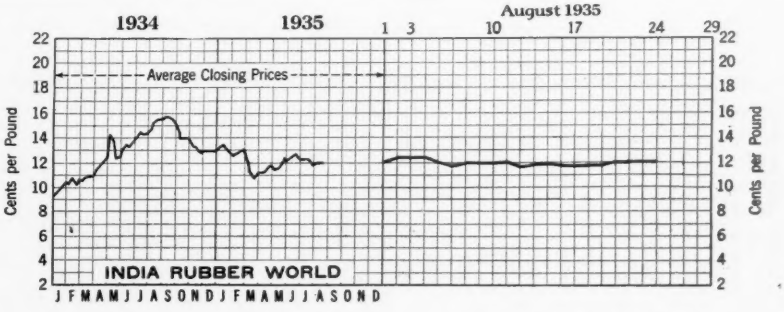
R.M.A. reported July consumption to be 36,384 long tons, almost equaling June at 36,623, and 11.8% more than in July, 1934. July imports were 46,880 long tons, 22.3% above those of June and 12.9% more than in July, 1934. The Commodity Exchange, Inc., reports 8,710 tons of reclaim used in June, 23.8% of the amount of crude rubber consumed then. In the first seven months of 1935, 59,130 tons of reclaim were consumed. This amounts to 23.1% of the crude rubber consumed during that period, as against 20.6% for the like period in 1934.

New York Quotations

New York outside market rubber quotations in cents per pound

Plantations	Aug. 27, 1934	July 27, 1935	Aug. 27, 1935
Rubber latex, normal .....gal.	58½	48	46
Sheet			
Ribbed, smoked, spot	15½/15¾	11¾/....	12⅛/12⅛
Oct.-Dec.	16 /16⅛	11⅛/12	12⅛/12¼
Jan.-Mar.	16⅜/16½	12⅛/12⅛	12⅛/12⅛
Apr.-June	16¾/16⅞	....	12⅜/12¾
Crepe			
No. 1 thin latex, spot	16⅞/17½	12 /....	12⅛/12¼
Oct.-Dec.	17⅛/18	12⅛/12¼	12⅜/12⅛
Jan.-Mar.	17½/18⅜	12⅜/12⅛	12⅛/....
Apr.-June	18 /18¾	....	12¾/12⅞
No. 3 Amber, spot	12½/12¾	11⅛/11⅜	11⅛/11⅛
No. 1 Brown	12⅜/12⅞	11¼/11½	11⅝/12
Brown rolled	9¼/ 9¾	10⅛/10¼	10⅛/10¾
Paras			
Upriver fine	11	9¾	10
Upriver fine	*15	*12¼	*12¼
Upriver coarse...	7½	..	7
Upriver coarse...	*11	*11¼	*11¼
Islands fine	10½	11¼	10¾
Islands fine	*14¾	..	*12½
Acre, Bolivian fine	11¼	10	10¼
Acre, Bolivian fine	*15	*12½	*12½
Beni, Bolivian ...	11¼	10¼	10¼
Madeira fine	11	10	10
Caucho			
Upper ball	7½	..	7
Upper ball	*11	*11¼	*11¼
Lower ball	7	..	6¾
Pontianak			
Bandjermasin	6	6½	7
Pressed block ...	10¾	9½/11	11
Sarawak	6	6½	7
Guayule			
Duro, washed and dried	12	12	12
Ampar	13	13	13
Africans			
Rio Nuñez	12	12	12
Black Kassai	12	10	10
Prime Niger flake.	20	25	25
Gutta Percha			
Gutta Siak	9¾	10¾/11	11
Gutta Soh	14¾	13 /13½	12¾
Red Macassar ...	1.50	1.25	1.25
Balata			
Block, Ciudad ... Bolivar	45	30	32
Manaos block	42	26	26
Surinam sheets ..	46	35	35
Amber	50	38	38

*Washed and dried crepe. Shipments from Brazil.



New York Outside Market—Spot Closing Prices Ribbed Smoked Sheets

RUBBER SCRAP

THE market is quiet. Dealers anticipate an improved demand will prevail during the next four months.

BOOTS AND SHOES. All grades are rather quiet but steady and unchanged in price.

INNER TUBES. The demand for these stocks is steady, and prices firm at slightly higher levels compared with those quoted one month ago except for No. 2 Compound, which is quoted unchanged.

TIRES. The market on all grades of tire scrap is rather quiet with most prices unchanged. Present prices do not warrant interest on the part of collectors.

SOLID TIRES. Domestic demand is fair; while export interest is increasing. Stocks are scanty. Quotations are down $1 a ton on both grades quoted.

MECHANICALS. All grades are in steady but moderate demand at prices quoted firm and unchanged.

HARD RUBBER. Stocks are scanty, and demand very active. Prices are unchanged.

CONSUMERS' BUYING PRICES

(Carload Lots Delivered Eastern Mills)

August 27, 1935

		Prices
Boots and Shoes		
Boots and shoes, black	lb.	$0.01 /$0.01⅛
Colored	lb.	.00¾/ .00⅞
Untrimmed arctics	lb.	.00¾/ .00⅞
Inner Tubes		
No. 1, floating	lb.	.07½/ .07¾
No. 2, compound	lb.	.03¼/ .03⅜
Red	lb.	.02⅝/ .02¾
Mixed tubes	lb.	.02¾/ .02⅞
Tires (Akron District)		
Pneumatic Standard		
Mixed auto tires with beads	ton	7.50 / 8.00
Beadless	ton	11.75 /12.00
Auto tire carcass	ton	9.50 /10.00
Black auto peelings	ton	16.00 /17.00

(Continued on page 74)

Rims Approved by The Tire & Rim Association, Inc.

Rim Size	6 Mos., 1935 No.	%	6 Mos., 1934 No.	%
Drop Center Rims, 16″ and under				
15x5.50E	.....	...	5,171	0.1
16x4.00D	1,383,459	13.7	1,061,024	14.2
16x4.25D	909,168	9.0	425,522	5.7
16x4.50D	251,670	2.5	412,743	5.5
16x5.00E	13,617	0.1	27	0.0
15x5.50E	9,015	0.1	.....	...
15x5.50F	21,107	0.2	756	0.0
16x4.00E	1,602,440	15.8	48,788	0.6
16x4.50E	1,484,085	14.7	497,670	6.6
16x5.00F	37,569	0.4	161,624	2.2
16x5.50F	2,651	0.0	23,140	0.3
Drop Center Rims, 17″ and over				
17x3.00D	888,907	8.8	553,706	7.4
17x3.25E	396,686	3.9	642,799	8.6
17x3.62F	942,814	9.3	1,604.288	21.4
17x4.00F	31,216	0.3	30,381	0.4
17x4.19F	16,594	0.2	6.052	0.1
18x2.15B	12,198	0.1	12,161	0.2
18x3.00D	14,253	0.1	12,922	0.2
18x3.25E	12,841	0.1	61,289	0.8
18x3.62F	.....	...	338	0.0
18x4.00F	21	0.0	4,208	0.1
18x4.19F	7,526	0.1	11,738	0.2
19x2.15B	9,532	0.1	7,966	0.1
19x3.00D	11,754	0.1	28,502	0.4
19x3.25E	6,503	0.1	1,410	0.0
20x3.25E	5,998	0.1	.....	...
21x3.25E	2,869	0.0	5,222	0.1
Flat Base Rims				
17x4	1,276	0.0	840	0.0
17x4½	422	0.0	.....	...
17x5	5,228	0.1	3,901	0.0
17x6	2,391	0.0	.....	...
18x3.00D	.....	...	1,005	0.0
18x3.25E	502	0.0	959	0.0
18x4	708	0.0	3,969	0.0
18x4½	309	0.0	.....	...
18x5	1,416	0.0	1,038	0.0
19x2.75D	3,437	0.0	5,586	0.1
19x3.00D	1,453	0.0	1,735	0.0
19x3½	.....	...	519	0.0
19x4	2,507	0.0	8,529	0.1
19x4½	893	0.0	1,892	0.0
19x5	291	0.0	980	0.0
19x6	.....	...	176	0.0
20x2.75D	1,918	0.0	7,069	0.1
20x3½	2,098	0.0	4,718	0.1
20x4	634	0.0	1,679	0.0
20x4½	1,887	0.0	3,982	0.1
20x5	6,517	0.1	21,032	0.3
20x6	107	0.0	975	0.0
21x2.75D	540	0.0	.....	...
21x3½	5,382	0.1	14,336	0.2
21x4	973	0.0	2,256	0.0
21x4½	3,251	0.0	2,417	0.0
21x5	.....	...	153	0.0
21x6	.....	...	358	0.0

Rim Size	6 Mos., 1935 No.	%	6 Mos., 1934 No.	%
High Pressure Rims				
30x3½	838	0.0	3,189	0.0
31x4	94	0.0	.....	...
32x4	99	0.0	520	0.0
32x4½	.....	...	619	0.0
34x4½	.....	...	208	0.0
18″ Truck Rims				
18x5	.....	...	630	0.0
18x6	220	0.0	141	0.0
18x7	15,922	0.1	13,982	0.2
18x8	1,470	0.0	954	0.0
20″ Truck Rims				
20x5	994,351	9.8	1,057,222	14.0
20x6	700,764	6.9	460,427	6.1
20x7	116,548	1.1	115,479	1.5
20x8	52,470	0.5	45,896	0.6
20x9/10	6,274	0.1	7,882	0.1
20x10.50	.....	...	701	0.0
20x11	720	0.0	295	0.0
22″ Truck Rims				
22x7	722	0.0	823	0.0
22x8	6,614	0.1	7,546	0.1
22x9/10	4,967	0.0	4,283	0.1
24″ Truck Rims				
24x5	.....	...	54	0.0
24x6	1,706	0.0	3,333	0.0
24x7	5,941	0.1	7,807	0.1
24x8	10,411	0.1	12,936	0.2
24x9/10	3,053	0.0	7,307	0.1
24x11	1,461	0.0	373	0.0
Drop Center Tractor Rims				
24x6.00S	2,262	0.0	3,339	0.0
24x8.00T	21,981	0.2	10,948	0.1
28x6.00S	157	0.0	.....	...
28x8.00T	6,021	0.1	3,804	0.1
32x8.00T	358	0.0	.....	...
36x6.00S	23,096	0.2	8,835	0.1
36x8.00T	2,839	0.0	643	0.0
40x6.00S	401	0.0	.....	...
Cast Rims				
10x5.00F	2,384	0.0	.....	...
24x11.25X	78	0.0	.....	...
Clincher, Auto				
30x3½	1,423	0.0	4,382	0.1
Clincher, Motorcycle				
24x3	249	0.0	134	0.0
Airplane Rims				
12x3	2,055	0.0	474	0.0
44x10	10	0.0	.....	...
Totals	10,106,592	...	7,494,717	...

New York Outside Market—Spot Closing Rubber Prices—Cents per Pound

	July, 1935 22	23	24	25	26	27*	29	30	31	August, 1935 1	2	3*	5	6	7	8	9	10*	12	13	14	15	16	17*
No. 1 Ribbed Smoked Sheet	12	11⅞	11¾	11⅞	11⅞	..	11⅞	11⅞	12⅛	12⅛	12¼	..	12⅝	12⅛	11⅞	12	12	..	12⅛	11⅞	11⅞	12	11⅞	..
No. 2 Ribbed Smoked Sheet	11⅞	11⅞	11⅞	11⅞	11½	..	11⅝	11⅞	11⅞	11⅞	11⅞	..	11⅞	11⅞	11⅞	11¾	11¾	..	11⅞	11⅞	11¾	11¾	11⅞	..
No. 3 Ribbed Smoked Sheet	11⅞	11⅞	11⅞	11⅞	11⅜	..	11½	11⅞	11¾	11¾	11⅞	..	11⅞	11¾	11⅞	11⅝	11⅝	..	11⅞	11⅞	11⅝	11⅞	11⅞	..
No. 4 Ribbed Smoked Sheet	11½	11⅜	11¼	11⅜	11⅞	..	11⅞	11½	11⅞	11¾	11¾	..	11¾	11⅞	11½	11⅞	11⅞	..	11⅝	11½	11⅞	11⅝	11½	..
No. 1 Thin Latex Crepe	12⅞	12⅛	11⅞	12⅛	12	..	12⅛	12⅛	12⅛	12⅞	12¾	..	12¾	12⅞	12⅛	12⅜	12⅛	..	12⅝	12	12⅞	12⅞	12	..
No. 1 Thick Latex Crepe	12⅞	12	11⅞	12	11⅞	..	12	12	12⅞	12⅞	12¾	..	12¼	12⅞	12	12	12	..	12	11⅞	11⅞	12	11⅞	..
No. 1 Brown Crepe	11⅞	11⅞	11⅞	11⅞	11⅜	..	11½	11⅞	11⅞	11⅞	11⅞	..	11⅞	11⅞	11¾	11¾	11¾	..	11¾	11⅞	11¾	11¾	11⅞	..
No. 2 Brown Crepe	11⅞	11⅞	11⅞	11⅞	11¾	..	11⅜	11⅞	11⅞	11¾	11⅞	..	11⅞	11¾	11⅝	11⅝	11⅝	..	11⅝	11⅞	11⅝	11⅝	11⅞	..
No. 2 Amber	11⅞	11⅞	11⅞	11⅞	11⅜	..	11½	11⅞	11⅞	11⅞	11⅞	..	11⅞	11⅞	11¾	11¾	11¾	..	11¾	11⅞	11¾	11¾	11⅞	..
No. 3 Amber	11⅞	11⅞	11⅞	11⅞	11¾	..	11⅜	11⅞	11⅞	11¾	11⅞	..	11⅞	11¾	11⅝	11⅝	11⅝	..	11⅝	11⅞	11⅝	11⅝	11⅞	..
No. 4 Amber	11⅞	11⅞	10⅞	11⅞	11	..	11⅛	11⅜	11⅞	11⅝	11⅞	..	11⅞	11⅝	11⅞	11⅜	11⅜	..	11⅜	11⅜	11⅜	11⅜	11⅜	..
Rolled Brown	10⅞	10⅞	10⅞	10⅞	10⅝	..	10⅜	10⅞	10½	10⅝	11⅛	..	10⅞	10⅝	10½	10⅜	10½	..	10½	10½	10½	10⅞	10½	..

*Closed.

New York Outside Market (Continued)

	August, 1935 19	20	21	22	23	24*
No. 1 Ribbed Smoked Sheet	11⅛	11⅞	12	12	12⅛	..
No. 2 Ribbed Smoked Sheet	11⅝	11⅝	11¾	11¾	11⅞	..
No. 3 Ribbed Smoked Sheet	11½	11½	11⅝	11⅝	11¾	..
No. 4 Ribbed Smoked Sheet	11⅞	11⅞	11⅞	11⅞	11⅝	..
No. 1 Thin Latex Crepe	11⅛	12	12⅛	12⅛	12⅛	..
No. 1 Thick Latex Crepe	11⅛	11⅞	12	12	12⅛	..
No. 1 Brown Crepe	11⅝	11⅝	11¾	11⅛	11⅞	..
No. 2 Brown Crepe	11½	11½	11⅝	11⅝	11¾	..
No. 2 Amber	11⅝	11⅝	11¾	11⅛	11⅞	..
No. 3 Amber	11½	11½	11⅝	11¾	11¾	..
No. 4 Amber	11¾	11¾	11⅜	11½	11½	..
Rolled Brown	10⅞	10⅝	10⅜	10⅛	10⅝	..

*Closed.

Low and High New York Spot Prices

All Prices in Cents per Pound

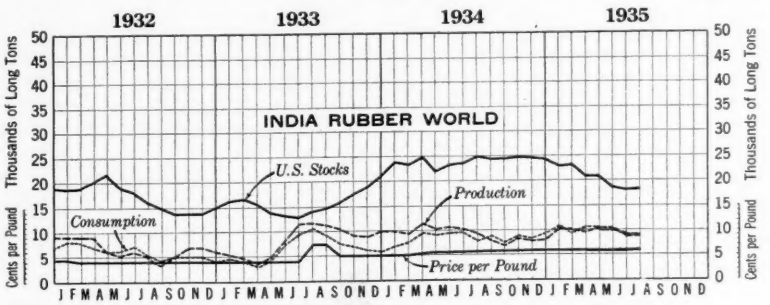
	August 1935*	1934	1933
PLANTATIONS			
No. 1 thin latex crepe	11⅛/12⅜	16¾/17⅜	7½/ 8¾
No. 1 ribbed smoked sheet	11⅛/12¼	14¹¹⁄₁₆/15¾	6⅝/ 7⅞
PARAS			
Upriver fine	9¾/10	11½/11¾	9¾/11

*Figured to August 27, 1935.

RECLAIMED RUBBER

THE reports of production and consumption of reclaim for July are essentially the same as for June although slightly lower. There are some signs of a pick-up in demand on the part of large consumers of reclaim, but as yet the expected fall activity in rubber goods manufacturing has not materialized. Reclaimers, however, are optimistic regarding the outlook for future business, especially in automotive accessories, wire insulation, battery boxes, and mechanical lines.

Quotations on all grades are unchanged from the figures recorded last month.



Production, Consumption, Stocks, and Price of Tire Reclaim

United States Reclaimed Rubber Statistics—Long Tons

Year	Production	Consumption	Consumption Per Cent to Crude	United States Stocks*	Exports
1933	99,974	81,612	20.1	20,746	3,583
1934	110,010	100,597	22.3	23,079	4,737
1935					
January	10,465	11,261	23.9	22,291	517
February	10,072	9,374	21.7	22,989	532
March	9,741	10,549	24.8	20,637	310
April	10,315	10,466	23.4	20,521	476
May	10,223	9,938	23.9	18,541	402
June	8,590	8,710	23.8	17,932	283
July	8,421	8,396	23.1	17,810	....

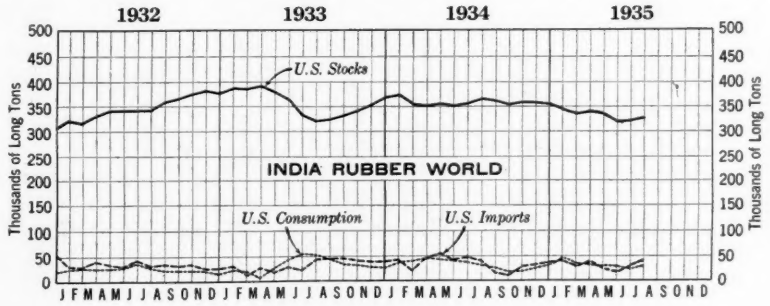
*Stocks on hand the last of the month or year.
Compiled by The Rubber Manufacturers Association, Inc.

New York Quotations

August 27, 1935

	Spec. Grav.	Cents per lb.
High Tensile		
Super-reclaim, black	1.20	8¾/9
red	1.20	7 /7¼
Auto Tire		
Black	1.21	5 /5¼
Black selected tires	1.18	5¼/5½
Dark gray	1.35	6¼/6¾
White	1.40	9¼/9½
Shoe		
Unwashed	1.60	6½/6¾
Washed	1.50	8 /9
Tube		
No. 1	1.00	13 /
No. 2	1.10	7½/7¾
Truck Tire		
Truck tire, heavy gravity	1.55	5½/6
Truck tire, light gravity	1.40	6 /6¼
Miscellaneous		
Mechanical blends	1.60	4¼/4½

IMPORTS, CONSUMPTION, AND STOCKS



United States Stocks, Imports, and Consumption

United States and World Statistics of Rubber Imports, Exports, Consumption, and Stocks

Twelve Months	U. S. Net Imports* Tons	U. S. Consumption Tons	U. S. Stocks Mfgrs., Importers, Dealers, Etc.† Tons	U. S. Stocks Afloat† Tons	U. K.—Public Warehouses, London, Liverpool†‡ Tons	Singapore and Penang Dealers and Port Stocks†‡ Tons	World Production (Net Exports)‡ Tons	World Consumption Estimated‡ Tons	World Stocks†‡§ Tons
1933	411,615	401,000	365,000	55,606	86,505	44,884	850,300	798,900	616,370
1934	469,484	453,223	355,000	47,644	134,927	62,142	1,016,784	959,556	678,994
1935									
January	42,059	47,103	346,084	42,066	148,337	59,609	79,813	89,216	671.954
February	35,383	43,187	337,332	42,969	155,727	57,586	75,775	90,494	658,717
March	44,041	42,620	338,700	44,485	162,012	55,100	66,686	88.112	652,659
April	43,545	44,714	334,954	37,651	165,064	48,827	76,443	80,721	651,471
May	26.866	41,568	319,281	44,375	167,745	54,740	77,854	.....	648,991
June	38,340	36,623	320.470	55 581	171,303	51,770	74,404	.....	647,579
July	46,880	36,384	330,528	49,018	.....	.....	.....	.....	.....

*Including liquid latex. †Stocks on hand the last of the month or year. ‡Statistical Bulletin of the International Rubber Regulation Committee. §Stocks at U. S. A., U. K., Singapore and Penang, Para, Manaos, and afloat.

CRUDE rubber consumption by United States manufacturers for July, 1935, totaled 36,384 long tons, compared with 36,623 long tons for June, 1935, a decrease of less than 1% below June but 11.8% above July, 1934, according to R.M.A. statistics. Consumption for July, 1934, was 32,553 (revised) long tons.

Crude rubber imports for July were 46,880 long tons, an increase of 22.3% above the June figure of 38,340 long tons, and 12.9% over 41,530 long tons imported in July, 1934.

The estimated total domestic stocks of crude rubber on hand July 31 were 330,528 long tons, against June 30 stocks of 320,470 long tons and 365,072 long tons on hand July 31, 1934.

Crude rubber afloat for the United States ports on July 31 was 49,018 long tons compared with 55,581 long tons afloat on June 30 and 45,869 long tons afloat on July 31, 1934.

London and Liverpool Stocks

Week Ended	Tons	
	London	Liverpool
Aug. 3	98,950	74,948
Aug. 10	99,423	75,778
Aug. 17	100,533	75,752
Aug. 24	99,860	75,503

FINANCIAL

B. F. Goodrich Co.

The B. F. Goodrich Co., Akron, O., and its subsidiaries for the six months ended June 30, 1935, reported sales of $59,161,319, against $52,363,157 for the corresponding period a year ago. Profits from operations were $2,902,977 before adding profits from the purchase of the company's bonds and sale of securities amounting to $222,769 and before deducting interest of $1,272,706 and provision for federal income tax of $300,000. This compared with $2,502,447 for the corresponding period in 1934.

After adding the profits on securities and deducting provisions for federal income tax, net profits for the first half of 1935, after all charges totaled $1,553,040, compared with $1,486,956 for the same period last year.

The consolidated balance sheet is as of June 30. Hood Rubber Co., Inc., became a subsidiary June 13, 1935. Its balance sheet is, therefore, taken into the consolidation. The consolidated profit and loss account is for the six months ended June 30, and since it was impracticable to determine the operating results of the Hood company for the seventeen-day period from June 13 to June 30, no Hood sales or operating results are included in the consolidated profit and loss account.

On December 31, 1934, the consolidated deficit of the company was $2,122,364. This has been eliminated, and a surplus of $107,535 resulted at June 30, 1935, through earnings of $1,553,040 and a direct credit of $676,859 to surplus representing the excess of the net worth of Hood at June 30, 1935, over the book value of the Goodrich company investment therein. This credit to surplus represents earnings shown on the books of Hood, but not taken into Goodrich books during the period when Hood was not a subsidiary.

The consolidated balance sheet at June 30 shows current assets of $72,970,376 (including cash and foreign short-term deposits of $6,193,037) and current liabilities of $17,412,031, a ratio of 4.19 to 1.

Bank loans of the parent company amounted to $5,375,000 on June 30.

Monsanto Chemical

Net earnings of the Monsanto Chemical Co., St. Louis, Mo., for the second quarter of 1935 were $923,125, or 94.8¢ a share on the 974,133 shares outstanding on June 30. These earnings are subject to independent audit and include those of the subsidiaries of The Swann Corp., acquired during the period. Net earnings for the same quarter last year were $704,918, or 81½¢ a share on the 864,000 shares then outstanding. Net earnings for the six months ending June 30, including Swann Corp. earnings, were $1,848,449, or $1.90 a share, compared to $1,397,035, or $1.59½ a share for the same period in 1934.

The balance sheet as of June 30, the first issued since the Swann merger, shows that all outstanding preferred stock of Swann subsidiaries, totaling $703,600, was retired during the second quarter, as well as all outstanding Monsanto 5½% mortgage bonds, amounting to $877,500. Gross assets are $34,655,643. Current assets are $12,432,934 against current liabilities of $2,437,843. Cash and marketable securities are shown at $4,741,434.

The directors on July 25 declared an extra dividend of 25¢ a share in addition to the usual dividend of 25¢ a share, both to be paid September 14 to stockholders of record August 24.

Thermoid Co.

Thermoid Co., Trenton, N. J., and wholly owned subsidiaries for the first six months of 1935, after all expenses including interest of $73,073 on the company's 6% notes and an allowance of $65,439 for depreciation, but without allowance for income tax, showed a net operating profit of $146,878, compared with a net profit of $93,446 for the same period last year. It also showed a reserve of $26,000 for federal income tax, based on earnings of subsidiaries which now are taxed separately. Net income available for dividends on the stock of the parent company after this tax reserve was $120,878, against a six-month dividend accrual of $110,523 for the outstanding first preferred stock.

Operations of the Southern Asbestos Co., Charlotte, N. C., not wholly owned, for the half year resulted in a net loss of $14,152 after all expenses, including taxes and allowance of $17,379 for depreciation.

U. S. Rubber

United States Rubber Co., 1790 Broadway, New York, N. Y., reported net sales for the six months ended June 30, 1935, of $57,722,837, against $52,495,958 in the first half of 1934.

The profit from operations, after interest on funded indebtedness of $1,810,099, but before provision for depreciation, amounted to $3,457,540. Provision for depreciation was $2,798,960, and the net increase in surplus account totaled $658,580.

Charges for taxes during the six months amounted to approximately $4,340,000, including excise and processing taxes of $3,325,000 and provision for federal income taxes of $260,000.

The plantations had a profit of approximately $215,000 after all charges, including provision for depreciation and amortization amounting to $803,000. These earnings have not been included in the results of U. S. Rubber as above.

Total current assets on June 30 were $60,275,290, against total current liabilities of $19,048,100. Cash on hand on June 30 was $11,347,873, and inventories, $30,286,764. This compares with cash of $10,979,722 on December 31, 1934.

Other Company Reports

American Cyanamid Co., 30 Rockefeller Plaza, New York, N. Y., and subsidiaries. Six months ended June 30, subject to audit and year-end adjustments: net income of $1,493,680 after depreciation, depletion, research and process development expense, interest, federal taxes, minority interest, and other charges, equivalent to 59¢ a share (par $10) on 2,520,370 combined shares of class A and B common stocks outstanding at the end of the period, excluding shares held by subsidiaries. This compares with $1,006,146, or 42¢ a share, on combined class A and B common stocks in the first half of last year.

E. I. du Pont de Nemours & Co., Wilmington, Del. Six months ended June 30: net income of $22,450,485; $23,553,598 for the same period 1934. The company's total current assets were $123,096,643, and total current liabilities $17,813,477. The current assets included $23,408,449 cash and $33,989,751 in marketable securities. The quoted market value of these securities on June 30, 1935, was $34,165,751.

Fisk Rubber Corp., Chicopee Falls, Mass., and subsidiaries. Six months ended June 30: net profit after federal taxes, and other charges, $5,514, equal to 15¢ a share on 36,579 shares of 6% preferred stock, compared with $372,768, equal, after preferred dividends, to 57¢ a share on 447,356 $1-par common shares a year before. Quarter ended June 30: net loss, based on quarterly reports, $37,231, contrasted with net profit of $42,745, or $1.17 a preferred share in previous quarter and $252,481, or 43¢ a common share, in second quarter of 1934. Gross sales, less returns and allowances,

(*Continued on page 76*)

Dividends Declared

Company	Stock	Rate	Payable	Stock of Record
Baldwin Rubber Co.	Class A Pfd., Accum.	$1.00	Aug. 20	Aug. 15
Firestone Tire & Rubber Co.	Pfd.	$1.50 q.	Sept. 1	Aug. 15
Gates Rubber Co.	7% Pfd.	$1.75 q.	Sept. 1	Aug. 15
Goodyear Tire & Rubber Co.	$7 Pfd., Accum.	$1.00	Oct. 1	Sept. 1
Hope Webbing Co.	Com.	$1.50 q.	Aug. 1	July 26
O'Sullivan Rubber Co.	Com.	$0.02½ q.	July 1	June 25
Plymouth Rubber Co.	7% Pfd.	$1.75 q.	July 15	July 12
Raybestos-Manhattan, Inc.	Com.	$0.25 q.	Sept. 14	Aug. 30
Tyer Rubber Co.	6% Pfd.	$1.50 q.	Aug. 15	Aug. 10
United Elastic Corp.	Com.	$0.10 q.	Sept. 24	Sept. 6

COMPOUNDING INGREDIENTS

ACCELERATORS AND ANTIOXIDANTS. Sales of these materials are moderate in volume. A distinct upturn in demand is expected in autumn with the increase of tire production.

CARBON BLACK. The market situation on carbon black remains normal and well-stabilized. Second-quarter consumption was quite good, and, if anything, represented some little decrease in stocks on hand. Undoubtedly, however, the third quarter will show considerable decrease in tire production; hence stocks will probably be in balance later in the year. The gas regulations laid down by the Railroad Commission in Texas, in carrying out the provisions of the recent legislation, have resulted in a considerable change in the various districts. So far this has had no marked effect on carbon production, and it will probably be worked out by producers without any important repercussions. It has without question removed the bulk of the gas available for new enterprises and, consequently, left a very marked effect upon the conservation of this important natural resource for use during the coming year.

FACTICE. The situation remains unchanged except for seasonal slowing up due to inventory taking by consumers.

LITHARGE. Demand for supplies by the rubber trade continues moderate. The price was advanced 5 points early in August to 5.70¢ a pound.

LITHOPONE. Demand is moderate. Prices are steady and unchanged from the first half year.

SOLVENTS. Late in June prices were advanced ⅛¢ by some refiners, but have since remained steady. Demand by tire manufacturers is fair.

STABILIZERS. The demand is conservative, and prices steady.

TITANIUM WHITES. The demand for these goods has declined seasonally. Production has overtaken demand under consuming conditions that are prevailing at present.

ZINC OXIDE. The call from the rubber industry maintains normal seasonal proportions. Prices for the second half of 1935 are at the same level as in the first half.

New York Quotations

August 27, 1935

Prices Not Reported Will Be Supplied on Application

Abrasives		
Pumicestone, powdered	lb.	$0.01¾/$0.03½
Rottenstone, domestic	lb.	.02½/ .05
English	ton	
Silica, 15	ton	38.00
Tripoli	lb.	.02¼/ .03
Accelerators, Inorganic		
Lime, hydrated	ton	20.00
Litharge (commercial)	lb.	.06½
Magnesia, calcined, heavy	lb.	.04
carbonate	lb.	.06½
Accelerators, Organic		
A-1	lb.	.21 / .25
A-5-10	lb.	.33 / .36
A-10	lb.	
A-11	lb.	.60 / .75
A-16	lb.	.55 / .65
A-19	lb.	.56 / .75
A-32	lb.	.70 / .80
A-77	lb.	
Accelerator 49	lb.	.40 / .50
85	lb.	
87	lb.	
122	lb.	
552	lb.	
808	lb.	
833	lb.	
Acrin	lb.	
Aldehyde ammonia	lb.	
Altax	lb.	
Beutene	lb.	
Butyl Zimate	lb.	
C-P-B	lb.	
Captax	lb.	
Crylene	lb.	
Paste	lb.	
D-B-A	lb.	
Di-Esterex	lb.	
Di-Esterex-N	lb.	
DOTG	lb.	.44 / .54
D.O.T.T.U.	lb.	
DPG	lb.	.35 / .45
Esterex	lb.	
Ethylideneaniline	lb.	
Formaldehyde P.A.C.	lb.	
Formaldehydeaniline	lb.	
Formaldehyde-para-toluidine	lb.	
Guantal	lb.	.42 / .51
Hepteen	lb.	
Base	lb.	
Hexamethylenetetramine	lb.	
Lead oleate, No. 999	lb.	.12
Witco	lb.	.11
Methylenedianilide	lb.	
Monex	lb.	
Novex	lb.	
Pipsolene	lb.	
R-2	lb.	1.50 / 1.90
Base	lb.	4.55 / 5.00
R & H 50-D	lb.	
Safex	lb.	
Super-sulphur No. 1	lb.	
No. 2	lb.	
Tepidone	lb.	
Tetrone A	lb.	
Thiocarbanilide	lb.	
Thionex	lb.	
Trimene	lb.	
Base	lb.	
Triphenyl guanidine (TPG)	lb.	
Tuads	lbs.	
Ureka	lb.	$0.62 /$1.00
Blend B	lb.	
C	lb.	.58 / .69
Vulcanex	lb.	
Vulcanol	lb.	
Vulcone	lb.	
Z-B-X	lb.	
Z-88-P	lb.	.48 / .60
Zenite	lb.	
A	lb.	
B	lb.	
Zimate	lb.	
Activator		
Barak	lb.	
Age Resisters		
Age-Rite Gel	lb.	
HP	lb.	
Powder	lb.	
Resin	lb.	
Syrup	lb.	
White	lb.	
Akroflex A	lb.	
B	lb.	
C	lb.	
Albasan	lb.	
Antox	lb.	
A-V-A-R	lb.	
B-L-E	lb.	
Flectol B	lb.	
H	lb.	
White	lb.	
M-U-F	lb.	
Neozone (standard)	lb.	
A	lb.	
C	lb.	
D	lb.	
E	lb.	
Oxynone	lb.	
Parazone	lb.	
Permalux	lb.	
Solux	lb.	
Thermoflex	lb.	
A	lb.	
V-G-B	lb.	
Alkalies		
Caustic soda, flake, Columbia (400 lb. drums)	100 lbs.	3.00 / 4.00
liquid, 50%	100 lbs.	2.25
solid (700 lb. drums)	100 lbs.	2.60 / 3.60
Antiscorch Materials		
Antiscorch T	lb.	
Cumar RH	lb.	.085
Retarder B	lb.	
W	lb.	
U.T.B.	lb.	
Antisun Materials		
Heliozone	lb.	
Sunproof	lb.	
Binder, Fibrous		
Asbestos	ton	30.00
Brake Lining Saturants		
B. R. C. No. 553	lb.	$0.015 /$0.017
B. R. T. No. 3	lb.	.015 / .017
Colors		
BLACK		
Lampblack (commercial)	lb.	.15
BLUE		
Brilliant	lb.	
Prussian	lb.	.40
Toners	lb.	.80 / 3.50
Ultramarine, dry, Group 1	lb.	.14
BROWN		
Mapico	lb.	.13
GREEN		
Brilliant	lb.	
Chrome, light	lb.	.20
medium	lb.	.20
oxide	lb.	.18½
Dark	lb.	
Guignet's	lb.	.75
Light	lb.	
Toners	lb.	.95 / 3.50
ORANGE		
Lake	lb.	
Toners	lb.	.40 / 1.60
ORCHID		
Toners	lb.	1.50 / 2.00
PINK		
Toners	lb.	1.50 / 4.00
PURPLE		
Permanent	lb.	
Toners	lb.	.60 / 2.00
RED		
Antimony		
Crimson, 15/17%	lb.	.50
R. M. P. No. 3	lb.	.46
Sulphur free	lb.	.48 / .55
Golden 15/17%	lb.	.28
7-A	lb.	.33
Z-2	lb.	.20
Aristi	lb.	1.70
Cadmium	lb.	.75 / .80
Chinese	lb.	
Crimson	lb.	
Iron Oxide		
Rub-Er-Red	lb.	.09¾
Mapico	lb.	
Medium	lb.	
Scarlet	lb.	
Toners	lb.	.80 / 2.00
WHITE		
Lithopone (bags)	lb.	.04½/ .04¾
Albalith Black Label-11	lb.	.04½/ .04¾
Astrolith (5-ton lots)	lb.	.04½/ .04¾
Azolith	lb.	.04½/ .04¾
Cryptone-19	lb.	.06 / .06¼
CB-21	lb.	.06 / .06¼
Sunolith (5-ton lots)	lb.	.04½/ .04¾
XX-20 Zinc Sulphide	lb.	.10½/ .10¾
86	lb.	.10½/ .10¾
Ray-Bar	lb.	
Ray-Cal	lb.	

Rayox	lb.	
Titanolith (5-ton lots)	lb.	$0.06 /$0.06¼
Titanox-A	lb.	.17 / .18¾
B	lb.	.06 / .06½
C	lb.	.06 / .06½
Ti-Tone	lb.	
Zinc Oxide		
Anaconda, Green Seal No. 333	lb.	.09⅜/ .09¾
Lead Free No. 352	lb.	.05¾/ .06
No. 570	lb.	.05¾/ .06
No. 577	lb.	.05¾/ .06
Red Seal No. 232	lb.	.08⅜/ .08¾
U.S.P. No. 777 (bbls)	lb.	.12¾
White Seal No. 555	lb.	.10⅜
Azo ZZZ-11	lb.	.05¾/ .06
44	lb.	.05¾/ .06
55	lb.	.05¾/ .06
66	lb.	.05¾/ .06
French Process, Florence White Seal-7 (bbls.)	lb.	.10⅜
Green Seal-8	lb.	.09⅜/ .09¾
Red Seal-9	lb.	.08⅜/ .08¾
Kadox, Black Label-15	lb.	.09⅜/ .09¾
Blue Label-16	lb.	.08⅜/ .08¾
Red Label-17	lb.	.07 / .07¼
Horse Head Special 3	lb.	.05¾/ .06
XX Red-4	lb.	.05¾/ .06
23	lb.	.05¾/ .06
72	lb.	.05¾/ .06
78	lb.	.05¾/ .06
80	lb.	.05¾/ .06
103	lb.	.05¾/ .06
110	lb.	.05¾/ .06
St. Joe (lead free)		
Black Label No. 20	lb.	.05¾/ .06
Green Label No. 42	lb.	.05¾/ .06
Red Label No. 30	lb.	.05¾/ .06
U.S.P. X (bbls.)	lb.	.12½
YELLOW		
Cadmolith (cadmium yellow)	lb.	.40 / .45
Lemon	lb.	
Mapico	lb.	.09½
Toners	lb.	2.50

Dispersing Agents

Bardex	lb.	.023 / .025
Bardol	lb.	.021 / .023
Darvan	lb.	

Factice—See Rubber Substitutes

Fillers, Inert

Asbestine, c.l., f.o.b. mills	ton	15.00
Barytes	ton	30.00
f.o.b St. Louis (50 lb. paper bags)	ton	22.85
off color, domestic	ton	22.50 /25.00
white, imported	ton	32.50 /35.00
Blanc fixe, dry, precip	ton	70.00 /75.00
Calcene	ton	35.00 /43.00
Infusorial earth	lb.	.02
Kalite No. 1	ton	
No. 3	ton	
Whiting		
Chalk, precipitated	lb.	.04¾/ .04¾
Columbia Filler	ton	9.00 /14.00
Domestic	100 lbs.	
Guilders	100 lbs.	
Hakuenka	lb.	
Paris white, English cliff-stone	100 lbs.	
Southwark Brand, Commercial	100 lbs.	
All other grades	100 lbs.	
Suprex, white, extra light	ton	45.40 /60.00
heavy	ton	45.40 /60.00
Witco, c.l.	ton	7.00
Wood flour	ton	20.00 /50.00

Fillers for Pliability

Fumonex, c.l., f.o.b. works, bags	lb.	.03
l.c.l., f.o.b. warehouse	lb.	.05½/ .07
P-33	lb.	
Thermax	lb.	
Velvetex	lb.	.03 / .04½

Finishes

IVCO lacquer, clear	gal.	
colors	gal.	
Rubber lacquer, clear	gal.	
colored	gal.	
Starch, corn, pwd	100 lbs.	3.68 / 3.88
potato	lb.	.04½/ .05½
Talc, dusting	ton	20.00 /25.00
Pyrax	ton	

Flock

Cotton flock, dark	lb.	.10½/ .11½
dyed	lb.	.50 / .85
white	lb.	.14½/ .20
Rayon flock, colored	lb.	1.25 / 1.40
white	lb.	1.00

Latex Compounding Ingredients

Alphasol-OS	lb.	
Antox, dispersed	lb.	
Aquarex D	lb.	
F	lb.	
Aresklene	lb.	
Casein, domestic, ground, 20-30 mesh	lb.	.11 / .11¼
Catalpo	ton	
Color pastes, dispersed	lb.	
Dispersaid	lb.	1.50
Dispersex 10	lb.	
15	lb.	
20	lb.	
Emo, brown	lb.	$0.13
white	lb.	.13
Factice Compound, dispersed	lb.	.25
Heliozone, Dispersed	lb.	
Igepon A	lb.	
Micronex, Colloidal (75 lbs.)	lb.	.11
Nekal BX (dry)	lb.	
Palmol	lb.	.085
Stablex A	lb.	
B	lb.	
C	lb.	
Sulphur, Colloidal	lb.	
Vulcan Colors	lb.	
Zinc oxide, Colloidal	lb.	

Mineral Rubber

B. R. C. No. 20	lb.	.0125/$0.014
Black Diamond	ton	25.00
Genasco Hydrocarbon, granulated, (fact'y)	ton	
solid	ton	
Gilsonite Hydrocarbon (factory)	ton	
Hydrocarbon, hard	ton	
soft	ton	
Parmr Grade 1 (f.o.b. Bayonne)	ton	30.00
Grade 2	ton	30.00
265°	ton	

Mold Lubricants

Mold Paste No 1	lb.	
Rusco mold paste	lb.	.12 / .30
Sericite	ton	65.00 /75.00
Soapbark	lb.	
Soapstone	ton	25.00 /30.00

Oils

Castor, blown, c.l., drums, returnable	lb.	.11½

Reclaiming Oils

B. R. V.	lb.	.039 / .041
S. R. O.	lb.	.012 / .014

Reenforcers

Carbon Black		
Aerfloted Arrow Specification Black	lb.	.0535/ .0825
Arrow Compact Black	lb.	
Granulized Carbon Black	lb.	
"Certified" Cabot	lb.	
Spheron	lb.	
Disperso (delivered)	lb.	.0445/ .0535
Dixie, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex.	lb.	.0445
c.l., delivered New York	lb.	.0535
local stock delivered	lb.	.07 / .08¼
Dixiedensed, c.l, f.o.b. New Orleans, La., Galveston or Houston, Tex.	lb.	.0445
c.l., delivered New York	lb.	.0535
local stock delivered	lb.	.07 / .08¼
Excello, c.l., f.o.b Gulf ports	lb.	.0445
delivered New York	lb.	.0535
l.c.l., delivered New York	lb.	.07 / .08¼
Gastex	lb.	.03 / .07
Kosmobile, c.l., f.o.b New Orleans, La., Galveston or Houston, Tex.	lb.	.0445
c.l., delivered New York	lb.	.0535
local stock delivered	lb.	.07 / .08¼
Kosmos, c.l., f.o.b. New Orleans, La., Galveston or Houston, Tex.	lb.	.0445
c.l., delivered New York	lb.	.0535
local stock delivered	lb.	.07 / .08¼
Micronex Beads	lb.	
Mark II	lb.	
Standard	lb.	
W-5	lb.	
W-6	lb.	
Pelletex	lb.	
Supreme, c.l., f.o.b. Gulf ports	lb.	.0445
delivered New York	lb.	.0535
l.c.l., delivered New York	lb.	.07 / .08¼
Carbonex	lb.	.030 / .0375
Carbonex "S"	lb.	.0315/ .040
Clays		
Aerfloted Paragon	ton	8.50
Suprex No. 1 Selected	ton	10.00
No. 2 Standard	ton	8.50
Dixie	ton	
Junior	ton	
McNamee	ton	
Par	ton	
Witco	ton	8.50
Cumar EX	lb.	.04

Reodorants

Amora A	lb.	
B	lb.	
C	lb.	
D	lb.	
Para-Dors	lb.	
Rodo No. 0	lb.	
No. 10	lb.	

Rubber Substitutes or Factice

Amberex	lb.	.15
Black	lb.	.07 / .11
Brown	lb.	.08 / .12
Duphax A	lb.	.095
B	lb.	$0.095
Fac-Cel B	lb.	.12
C	lb.	.12
White	lb.	.08½/$0.12

Softeners

B. R. C. No. 555	lb.	.012 / .014
B. R. T. No. 7	lb.	.015 / .017
Burgundy pitch	lb.	.04 / .05
(net weight)	lb.	.07 / .08½
Corn oil, crude (bbls.)	lb.	.10
Cycline oil	gal.	.15 / .28
Palm oil (Witco)	lb.	.06
Petrolatum, light amber	lb.	.03½/ .03⅝
Pigmentar (drums)	gal.	.25 / .27
Pigmentaroil (drums)	gal.	.25 / .27
Pine oil, dest. distilled (drums)	gal.	.44 / .48
pitch	bbl.	6.00
tar (drums)	gal.	.25 / .27
Plastogen	lb.	
Reogen	lb.	
Rosin oil, compounded	gal.	.40
Rubtack	lb.	.10
Tacko	lb.	.085 / .18
Tonox	lb.	
Powder	lb.	
Witco No. 20	gal.	.15

Softeners for Hard Rubber Compounding

RSL Resin	lb.	
Resin C Pitch 55° C. M. P.	lb.	.0125/ .0145
Resin C Pitch 70° C. M. P.	lb.	.0125/ .0145
Resin C Pitch 85° C. M. P.	lb.	.0126/ .0145

Solvents

Benzol 90% (drums)	gal.	.20
Beta-Trichlorethane	gal.	
Bondogen	gal.	
Carbon bisulphide	lb.	.05¼/ .08½
tetrachloride	lb.	.05¼
Dipentene, commercial (drums)	gal.	.42 / .44
Rubber (Group 3, refinery)	gal.	.06¾/ .07¼
Solvesso No. 1, tank cars	gal.	.17½
No. 2	gal.	.22½
No. 3	gal.	.17½
No. 4	gal.	.22½
Turpentine, wood, dest. distilled (drums)	gal.	.41 / .43

Stabilizers for Cure

Laurex, ton lots	lb.	
Stearex B	lb.	.10¾/ .11¾
Beads	lb.	.084 / .094
Stearic acid, dbl. pres'd	lb.	.12 / .14
Single pressed	lb.	.11 / .13
Stearite	lb.	.08
Zinc stearate	lb.	.22 / .25

Synthetic Rubber

DuPrene Latex Type 50	gal.	
Type D	lb.	

Tackifier

B. R. H. No. 2	lb.	.015 / .020

Varnish

Shoe	gal.	1.45

Vulcanizing Ingredients

Sulphur		
Chloride, drums	lb.	.03½/ .04
Flowers, extrafine refined, U.S.P.	100 lbs.	
Rubber	100 lbs.	1.95 / 2.75
Telloy	lb.	
Vandex	lb.	

(See also Colors—Antimony)

Waxes

Carnauba, No. 3 chalky	lb.	.38
2 N.C.	lb.	.40½
3 N.C.	lb.	.38½
1 Yellow	lb.	.48½
2	lb.	.47½
Montan, crude	lb.	.10½

Rubber Scrap

(*Continued from page 70*)

CONSUMERS' BUYING PRICES

(Carload Lots Delivered Eastern Mills)

August 27, 1935

		Prices
Tires (Akron District—*Cont'd*)		
Solid		
Clean mixed truck	ton	35.00 /36.00
Light gravity	ton	38.00 /39.00

Mechanicals

Mixed black scrap	ton	15.00 /17.00
Hose, air brake	ton	14.00 /15.00
Garden, rubber covered	ton	13.00 /13.50
Steam and water, soft	ton	13.00 /13.50
No. 1 red	lb.	.02¼/ .02⅜
No. 2 red	lb.	.01½/ .01¾
White druggists' sundries	lb.	.02¾/ .03
Mechanical	lb.	.02 / .02½

Hard Rubber

No. 1 hard rubber	lb.	.11⅛/ .11½

QUALITY

That elusive something that makes certain manufacturers and their products outstanding. Quality is attained only through years of experience, endless experimentation, persistence, imagination, vision, and supervision. Pequanoc stocks under the Indian trade-mark are standards of Quality recognized by the trade.

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The cornerstone of Quality. Absolutely essential in the advancement of any product, particularly so in Rubber where exacting specifications must be met; such as, aging qualities, speed in tubing, uniformity of breakdown, and absorption of load. A carload of PEQUANOC RECLAIMS is just as trustworthy as a sample bag.

CLEANLINESS

Reclaims were well named "Shoddy" in the early days of the Industry because they were rough, lumpy, coarse-grained. Today the surprising advance in processing, straining, and refining with highly specialized machinery has put them in a position to challenge Crude in many compounds. Shoddy is as obsolete as the one-horse shay. Pequanoc Reclaims — clean, velvety smooth—can be purchased today at prices below those of the old shoddies.

Business is developing; the Fall months are earmarked for activity. Crude prices are firm and rising. Hold down compound costs with reliable reclaims—by PEQUANOC.

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COTTON AND FABRICS

NEW YORK COTTON EXCHANGE WEEK-END CLOSING PRICES

Futures	June 29	Aug. 3	Aug. 10	Aug. 17	Aug. 24
July	11.83	.....	.....	.....	.....
Aug.	.....	11.30	11.22	11.39	.....
Sept.	11.61	11.35	11.22	11.39	10.43
Dec.	11.51	11.24	11.09	11.24	10.34
Mar.	11.54	11.16	10.99	11.15	10.34
May	11.59	11.14	10.99	11.13	10.36
July	.....	11.10	10.97	11.11	10.36

THE above table gives the nearest first and last week-end closing prices of the month previous to that under review, also the week-end closing prices of each week of last month up to time of going to press. This plan permits tracing at a glance the prices of representative futures for approximately two consecutive months.

July closed with prices sharply reduced from those of the beginning of the month. The same old fear of what the government might do about loans caused sharp reactions of more than 40 points during the last week of the month. Prices during August were subject to very erratic movement due to the frequent and encouraging statements made by AAA senators regarding, first, the favorable prospects of a 12¢ or higher government loan on the 1935 crop, and, second, recurrently announcing that the plan would be made public within a few hours. Each day proved their statements to be mistaken, thus causing discouragement to alternate with encouragement on the part of traders. Favorable crop conditions and the official government estimate, August 8, of 11,798,000 bales added impetus to the declining trend. Secretary Wallace finally announced, August 22, that the Government would guarantee cotton growers a return of not less than 12¢ per pound by paying them the equal of such differences, if any, as would exist between 12¢ and the average price of 7/8-inch middling cotton during the period from September 1 to January 1.

The Commodity Credit Corporation was said to offer a 9¢ per pound straight loan which would give the farmer current finances. At the time of going to press this had little effect on price levels as the exact mechanism of operation was not sufficiently understood. It was thought, however, that it would prove a beneficial arrangement for both farmers and mill operators as it would permit free trading without the handicap of a pegged price.

Revision of United States standards for grades of American upland cotton was announced by Secretary of Agriculture Wallace, effective August 20, 1936, under authority of the Cotton Standards Act and in accordance with the international agreement between the Department of Agriculture and principal cotton associations of Europe. This revision has been made to make the standards more nearly represent the crop. The number of grades is reduced from 37 to 32 and the number of standard boxes from 25 to 13. Blue-stained grades are dropped and yellow stained are made descriptive. White grades are shifted slightly to include whiter cottons, and the more creamy bales in the high grades are eliminated since such cotton cannot be found in quantities sufficient to make copies of the old standards.

The plan of 1935 cotton crop loans announced by Secretary Wallace August 22 was not supported by Congress.

New York Quotations

August 27, 1935

Drills		
38-inch 2.00-yard	yd.	$0.14⅝
40-inch 3.47-yard		.09
50-inch 1.52-yard		.21¼
52-inch 1.85-yard		.18¾
52-inch 1.90-yard		.15⅞
52-inch 2.20-yard		.14¼
52-inch 2.50-yard		.12½
59-inch 1.85-yard		.15½
Ducks		
38-inch 2.00-yard D. F.	yd.	.14¾/.15
40-inch 1.45-yard S. F.		.20¾
51½-inch 1.35-yard D. F.		.21½
72-inch 1.05-yard D. F.		.28½/.29½
72-inch 17.21-ounce		.33⅜
MECHANICALS		
Hose and belting	lb.	.34
TENNIS		
52-inch 1.35-yard	yd.	.22½
***Hollands**		
GOLD SEAL		
30-inch No. 72	yd.	.19
40-inch No. 72		.20
RED SEAL		
30-inch	yd.	.16½
40-inch		.17½
50-inch		.23
Osnaburgs		
40-inch 2.34-yard	yd.	.12 /.12⅝
40-inch 2.48-yard		.11⅜
40-inch 2.56-yard		.11
40-inch 3.00-yard		.10
40-inch 7-ounce part waste		.11
40-inch 10-ounce part waste		.16⅜
37-inch 2.42-yard		.12¼
Raincoat Fabrics		
COTTON		
Rombazine 60 x 64	yd.	.09
Plaids 60 x 48		.11½
Surface prints 60 x 64		.12½
Print cloth, 38½-inch, 60 x 64		.06¼
SHEETINGS, 40-INCH		
48 x 44, 2.50-yard	yd.	.10½
64 x 68, 3.15-yard		.09¾
56 x 60, 3.60-yard		.08⅜
44 x 48, 3.75-yard		.06⅝
SHEETINGS, 36-INCH		
48 x 40, 5.00-yard	yd.	.05¾
44 x 40, 6.15-yard		.04⅞
Tire Fabrics		
BUILDER		
17¼ ounce 60" 23/11 ply Karded peeler	lb.	.36¾
CHAFER		
14 ounce 60" 20/8 ply Karded peeler	lb.	.36¾
9¼ ounce 60" 10/2 ply Karded peeler	lb.	.36¾
CORD FABRICS		
23/5/3 Karded peeler, 1 1/16" cotton	lb.	.36¾
15/3/3 Karded peeler, 1 1/16" cotton	lb.	.34¾
23/5/3 Karded peeler, 1¼" cotton	lb.	.41¼
23/5/3 Combed Egyptian	lb.	.50¾
LENO BREAKER		
8¼ ounce and 10¼ ounce 60" Karded peeler	lb.	.32

*For less than 1,000 yards of a width add 10% to given prices.

WEEKLY AVERAGE PRICES OF MIDDLING COTTON

Week Ended	Cents per Pound
Aug. 3	12.00
Aug. 10	11.76
Aug. 17	11.61
Aug. 24	11.47

Just before closing its present prolonged session August 26, Congress passed AAA amendments placing a straight 10¢ loan on cotton plus a grant to the farmer of the difference between 12¢ and the average daily market price; this to be paid immediately after the sale of his cotton.

Cotton Fabrics

DUCKS, DRILLS, AND OSNABURGS. The market for coarse construction fabrics has continued at about the same levels for the past month. Demand and volume are fair, and apparently buyers are as willing to purchase as sellers are to sell until some of the market questions as to future values are settled. The call is slowly increasing for merchandise with firmer prices than during the past three months as to the spread between cotton and fabrics.

SHEETINGS. After an advance of ¼ to ½¢ a yard the market hesitated further advance pending announcement of the Government loan policy on next year's cotton crop. Prices will continue to advance probably as long as there is well sustained demand.

TIRE FABRICS. Demand is moderate and seasonal; while prices continue steady and unchanged.

Financial

(*Continued from page 72*)

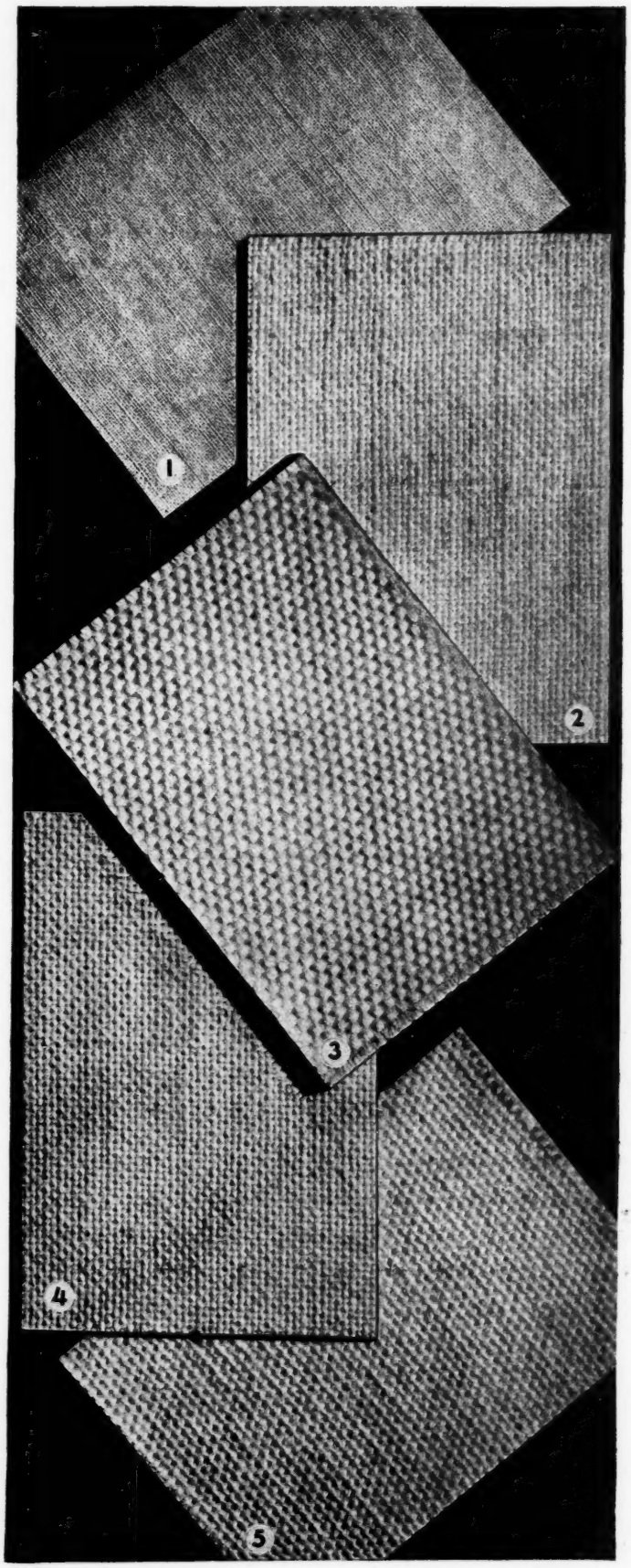
for six months were $5,489,305, against $5,032,919 in first half of 1934.

The New Jersey Zinc Co., 160 Front St., New York, N. Y. Six months ended June 30, 1935: net income of $2,174,213, equaling $1.11 per share on the 1,963,264 shares of $25 par stock. This compares with $2,086,511, or $1.06 per share, in the same period last year.

O'Sullivan Rubber Co., Inc., Winchester, Va., for 1934: net income, $26,977; gross sales, $1,422,099.

St. Joseph Lead Co., 250 Park Ave., New York, N. Y., and subsidiaries. Six months ended June 30: net loss after depreciation, abandoned leases, interest, minority interest, federal taxes, and depletion, $78,398, against $186,662 loss a year earlier.

United Carbon Co., Charleston, W. Va., and subsidiaries. Six months ended June 30: net profit of $937,969 after taxes, depreciation, depletion, and other charges, equivalent to $2.36 per share of common stock. Profit the same period in 1934 was $670,373, or $1.67 per share.



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Seventeen mills and adequate engineering and laboratory facilities assure you of technical excellence and ultimate economy.

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5. *Hose Duck*

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WELLINGTON SEARS CO.
65 WORTH STREET NEW YORK

U. S. Crude and Waste Rubber Imports for 1935

	Plantations	Latex	Paras	Africans	Centrals	Guayule	Manicoba and Matto Grosso	Totals 1935	Totals 1934	Balata	Miscellaneous	Waste
Jan. .....tons	41,188	599	201	30	41	..	..	42,059	46,204	26	553	..
Feb.	33,722	388	1,208	14	51	..	..	35,383	31,032	73	194	29
Mar.	42,373	967	513	167	21	..	..	44,041	44,605	55	659	40
Apr.	41,857	1,089	531	63	5	..	..	43,545	45,662	60	644	14
May	25,256	1,106	294	60	..	50	..	26,766	47,954	55	474	16
June	36,833	860	467	80	..	100	..	38,340	49,683	135	521	20
July	45,456	973	291	46	14	100	..	46,880	41,530	84	553	25
Total, 7 mos., 1935 .....tons	266,685	5,982	3,505	460	132	250	..	277,014	.....	488	3,598	144
Total, 7 mos., 1934 .....tons	297,682	6,980	1,580	96	32	300	..	.....	306,670	855	4,078	487

Compiled from The Rubber Manufacturers Association, Inc., statistics.

United States Latex Imports

Year	Pounds	Value
1931	10,414,712	$884,355
1932	11,388,156	601,999
1933	24,829,861	1,833,671
1934	29,276,134	3,633,253
1935		
Jan.	1,898,962	287,583
Feb.	1,282,941	179,583
Mar.	2,889,525	354,654
Apr.	3,854,892	415,100
May	3,197,450	380,844
June	1,324,776	152,665

Data from Leather and Rubber Division, United States Department of Commerce, Washington, D. C.

Tire Production Statistics

	Pneumatic Casings—All Types: Inventory	Production	Total Shipments
1933	7,110,456	36,243,384	35,274,970
1934	9,171,335	45,815,763	45,285,955
1935			
Jan.	10,085,737	4,487,679	3,552,737
Feb.	11,183,674	4,251,183	3,188,772
Mar.	11,325,010	4,215,214	4,078,007
Apr.	10,673,140	4,376,383	4,989,291
May	10,796,842	4,049,915	3,945,364
June	10,432,738	3,792,537	4,134,489

	Inner Tubes—All Types		
1933	6,251,941	34,044,689	33,112,472
1934	8,904,496	44,840,971	43,694,130
1935			
Jan.	9,332,489	4,131,004	3,610,371
Feb.	10,151,721	4,046,062	3,261,488
Mar.	10,094,170	3,999,030	4,043,350
Apr.	9,864,446	4,131,658	4,319,648
May	10,296,437	3,775,145	3,347,258
June	9,748,054	3,376,082	3,903,645

	Solid and Cushion Tires		
1933	26,271	130,987	126,990
1934	34,710	197,497	187,152
1935			
Jan.	31,581	21,510	20,300
Feb.	.....	17,657	16,183
Mar.	.....	17,603	20,224
Apr.	.....	20,002	21,783
May	.....	22,533	21,150
June	.....	16,067	20,053

	Cotton and Rubber Consumption Casings, Tubes, Solid and Cushion Tires: Cotton Fabric Pounds	Crude Rubber Pounds	Consumption of Motor Gasoline (100%) Gallons
1933...	148,989,293	512,489,423	15,880,746,000
1934...	196,069,495	697,558,218	17,063,298,000
1935			
Jan....	19,607,932	72,968,356	1,178,604,000
Feb....	18,058,726	66,463,131	1,133,378,000
Mar....	17,581,651	64,583,859	1,343,874,000
Apr....	17,944,131	71,286,972	1,515,129,000
May...	17,328,212	67,822,472	1,641,738,000
June...	15,802,601	58,152,530	1,591,128,000

Rubber Manufacturers Association, Inc., figures representing approximately 97% of the industry for 1934 and 1935 and 80% for previous years, with the exception of gasoline consumption.

U. S. Footwear Imports

Rubber-Soled Shoes with Fabric Uppers

Customs Districts	June, 1935: Pairs	Value
Buffalo	7	$7
New York	12,660	7,335
Maryland	63	17
New Orleans	76	24
Los Angeles	12,777	2,366
San Francisco	7,920	1,445
Washington	170	178
Hawaii	45,552	5,914
Chicago	1,500	118
Puerto Rico	998	614
Virgin Islands	8,587	2,612
Total	90,310	$20,630

Other Rubber Boots and Shoes

Customs Districts	June, 1935: Pairs	Value
Philadelphia	7,133	$3,912
Washington	4	7
Hawaii	1,958	271
St. Louis	336	399
Puerto Rico	855	329
Virgin Islands	3,532	1,333
Total	13,818	$6,251

World Net Imports of Crude Rubber

Year	U.S.A.	U.K.	Australia	Belgium	Canada	Central Europe	France	Germany	Italy	Japan	Russia	Rest of the World	Total
1928	407,500	4,400	8,400	7,900	30,900	10,000	38,000	37,900	12,400	25,800	8,000	12,300	603,500
1929	528,600	122,800	15,900	9,400	35,500	13,900	61,800	49,100	16,400	34,300	12,700	16,700	917,100
1930	457,400	120,000	5,400	10,700	28,800	12,100	71,400	45,800	18,600	33,000	16,700	19,300	839,200
1931	476,200	85,200	7,700	11,000	25,300	15,200	47,800	39,200	10,100	43,500	30,700	20,800	812,700
1932	393,800	43,500	12,400	9,500	20,900	15,800	41,700	45,000	15,300	56,100	30,000	26,800	710,800
1933	398,400	73,300	13,500	11,200	19,300	18,900	63,100	54,100	19,300	66,900	30,800	30,100	798,900
1934	438,941	158,481	9,642	9,116	28,439	23,427	50,405	59,130	21,403	69,934	47,272	43,166	959,556
1935													
Jan.	39,546	20,383	1,099	419	2,670	1,966	5,678	4,286	1,648	4,402	3,446	3,673	89,216
Feb.	45,999	15,609	848	399	1,558	2,547	4,670	3,513	4,357	5,585	1,810	3,599	90,494
Mar.	44,772	12,810	1,458	240	2,710	1,463	4,085	6,353	1,582	4,423	4,624	3,592	88,112
Apr.	40,360	11,574	1,150	520	1,063	1,591	3,368	5,820	1,653	6,635	3,387	*3,600	80,721
May	.....	12,498	671	982	3,929	1,665	3,900	6,050	*1,800	5,432	1,937	*3,400	.....

* Estimate. Source: *Statistical Bulletin of the International Rubber Regulation Committee.*

Shipments of Crude Rubber from Producing Countries

Year	Malaya including Brunei and Labuan	N.E.I.	Ceylon	India	Burma	North Borneo	Sarawak	Siam	French Indo-China	Philippines and Oceania: Total	Africa	South America	Mexican Guayule	Grand Total
1928	299,000	229,000	58,000	7,200	4,800	7,000	10,600	4,100	9,100	628,800	1,300	7,500	21,600	3,000	662,200
1929	457,000	255,000	80,300	7,900	5,500	7,400	11,200	4,300	9,500	838,100	900	6,300	21,300	1,300	867,900
1930	443,000	241,000	75,600	6,800	5,200	7,100	10,600	4,700	9,700	803,700	1,200	4,900	14,300	1,000	825,100
1931	423,000	257,000	62,300	5,400	4,200	6,200	10,400	3,600	11,000	783,100	900	3,500	12,200	0	799,700
1932	406,000	211,000	49,300	1,100	3,000	5,400	7,100	3,000	13,500	699,400	800	2,100	6,500	0	708,800
1933	445,800	280,800	63,800	1,500	3,400	7,800	11,100	7,000	15,900	837,100	1,100*	2,000	10,100	0	850,300
1934	467,030	379,401	79,068	5,735	5,719	11,086	17,708	17,714	19,628	1,003,089	1,233*	2,921	9,143	398	1,016,784
1935															
Jan.	41,665	18,679	6,294	1,549	945	1,238	1,574	2,614	2,575	77,133	105	467	2,108	0	79,813
Feb.	32,824	27,835	5,551	331	489	760	1,922	2,288	2,018	74,018	156	254	1,347	0	75,775
Mar.	34,047	22,402	1,720	257	471	773	1,901	2,076	1,440	65,087	82	525	992	0	66,686
Apr.	37,442	26,156	3,749	139	263	846	1,895	1,661	2,827	74,978	134	185	1,146	0	76,443
May	27,740	36,289	4,473	265	484	848	2,003	2,752	1,800	76,654	100*	350*	700*	50	77,854
June	31,203	29,239	3,525	651	383	603	2,020	2,869	2,516	73,009	100*	400*	895	0*	74,404

*Estimate. Source: *Statistical Bulletin of the International Rubber Regulation Committee.*

CLASSIFIED ADVERTISEMENTS

ALL CLASSIFIED ADVERTISING MUST BE PAID IN ADVANCE

GENERAL RATES	SITUATIONS WANTED RATES	SITUATIONS OPEN RATES
Light face type $1.00 per line (ten words)	Light face type 40c per line (ten words)	Light face type 75c per line (ten words)
Bold face type $1.25 per line (eight words)	Bold face type 55c per line (eight words)	Bold face type $1.00 per line (eight words)

Allow nine words for keyed address. *Replies forwarded without charge.*

SITUATIONS WANTED

POSITION WITH PROGRESSIVE COMPANY MANUFACTURING hard rubber or mechanicals, as superintendent, development or selling capacity. Qualified by long experience in similar capacities with reputable concerns. Diplomatic, energetic, capable, and practical executive. Address Box No. 548, care of INDIA RUBBER WORLD.

COMPOUNDER: 20 YEARS' EXPERIENCE IN ALL TYPES OF rubber goods, desires position in New York, New Jersey, or Connecticut. Employed in mechanicals at present. Address Box No. 553, care of INDIA RUBBER WORLD.

POSITION WANTED WITH PROGRESSIVE COMPANY MANUfacturing mechanicals, dipped goods, or hard rubber, as superintendent or compounder. Fully qualified by long experience in similar capacities with reputable companies. Diplomatic, energetic, capable. Graduate chemist. Address Box No. 555, care of INDIA RUBBER WORLD.

EXECUTIVE, WITH 20 YEARS OF CRUDE RUBBER IMPORTING exporting, and trading experience in all world markets and commodity exchanges, including the Far East, and an accredited judge of all wild, native, and plantation grades, desires to become associated with the crude rubber department of a manufacturer, importer, or dealer. Address Box No. 556, care of INDIA RUBBER WORLD.

SITUATIONS WANTED—Continued

I AM PLACING THIS AD IN HOPE SOME MANUFACTURER OF rubber goods will see same that has an opening for a man with years of experience in all classes of manufacturing rubber: compounding, milling, tubing machine, presses, hand building mandrel work, sponge hard rubber, mechanical goods of all descriptions. Address Box No. 559, care of INDIA RUBBER WORLD.

SITUATIONS OPEN

WANTED: MAN WITH PRACTICAL PROOFING EXPERIENCE, capable of developing new coatings. State experience and outline past accomplishments. Applications will be treated confidential. Address Box No. 547, care of INDIA RUBBER WORLD.

EXPERIENCED MAN TO SELL AND SERVICE ESTABLISHED line of rubber machinery. Eastern headquarters. State qualifications, history, salary, in confidence. Address Box No. 549, care of INDIA RUBBER WORLD.

HARD RUBBER: PARTY WITH PRACTICAL EXPERIENCE IN compounding and manufacturing hard rubber and other goods. Address Box No. 554, care of INDIA RUBBER WORLD.

(*Advertisements continued on page 83*)

United States Statistics

Imports for Consumption of Crude and Manufactured Rubber

	May, 1935		Five Months Ended May, 1935	
UNMANUFACTURED—*Free*	Pounds	Value	Pounds	Value
Crude rubber	65,582,818	$7,171,025	450,754,088	$52,196,756
Liquid latex	3,197,450	380,844	13,123,770	1,617,764
Jelutong or pontianak	743,156	51,805	4,275,248	304,824
Balata	116,378	12,931	679,643	96,148
Gutta percha	217,872	33,699	2,196,171	306,702
Guayule	112,000	9,464	112,000	9,464
Scrap and reclaimed, etc.	618,379	12,844	2,399,764	29,233
Totals	70,588,053	$7,672,612	473,540,684	$54,560,891
Chicle, crude *Free*	35,427	$5,210	2,589,839	$5,89,574
MANUFACTURED—*Dutiable*				
Rubber soled footwear with fabric uppers *pairs*	40,182	$8,846	371,879	$98,867
Rubber toys	122,680	16,389	589,791	72,186
Druggists' sundries, n. e. s.	.....	8,584	.....	41,936
Combs, hard rubber *number*	14,316	699	222,408	12,309
Golf balls *number*	57,612	10,491	226,776	40,088
Tennis and other rubber balls *number*	302,924	26,410	2,333,155	109,987
Tires *number*	723	977	12,226	10,038
Other rubber manufactures	.....	45,779	.....	187,630
Totals	.....	$118,175	.....	$573,041

Exports of Foreign Merchandise

RUBBER AND MANUFACTURES				
Crude rubber	1,776,552	$202,402	14,737,921	$1,733,353
Balata	25,414	7,402	95,620	24,168
Gutta percha, rubber substitutes, and scrap	.....	.....	23,840	3,730
Rubber manufactures	.....	1,763	.....	10,614
Totals	.....	$211,567	.....	$1,771,865

Exports of Domestic Merchandise

RUBBER AND MANUFACTURES				
Reclaimed	897,978	$41,429	5,008,102	$242,964
Scrap	4,924,297	82,167	22,210,723	399,727
Rubberized automobile cloth, *sq. yd.*	70,882	36,726	230,042	123,230
Other rubberized piece goods and hospital sheeting *sq. yd.*	96,939	39,573	481,530	184,985
Footwear				
Boots *pairs*	14,495	31,745	43,602	95,440
Shoes *pairs*	22,019	8,800	77,649	41,391
Canvas shoes with rubber soles *pairs*	93,866	42,083	330,775	155,945
Soles *doz. pairs*	4,219	5,890	11,613	18,708
Heels *doz. pairs*	23,406	14,132	173,305	101,160
Soling and top lift sheets	10,553	1,722	94,411	16,762
Water bottles and fountain syringes *number*	18,907	5,676	72,097	25,994
Gloves *doz. pairs*	4,448	11,054	22,713	51,180
Other druggists' sundries	.....	31,946	.....	150,174
Balloons *gross*	18,007	16,410	115,499	101,296
Toys and balls	.....	4,438	.....	19,795
Bathing caps *doz.*	4,112	8,161	30,963	57,502
Bands	21,389	6,908	95,471	33,288
Erasers	20,617	12,275	139,103	81,385
Hard rubber goods				
Electrical goods	128,813	13,446	690,956	67,142
Other goods	.....	15,595	.....	80,830
Tires				
Truck and bus casings, *number*	14,156	271,458	85,685	1,529,218
Other automobile casings, *number*	53,380	475,636	314,740	2,683,004
Tubes, auto *number*	44,389	58,677	272,025	362,705
Other casings and tubes, *number*	2,738	13,787	18,235	62,932
Solid tires for automobiles and motor trucks *number*	407	11,518	2,438	67,272
Other solid tires	63,433	9,271	537,223	74,000
Tire sundries and repair materials	.....	25,884	.....	161,622
Rubber and friction tape	45,793	11,897	224,899	60,446
Belting	224,991	113,922	979,858	497,426
Hose	365,079	107,245	1,855,233	544,373
Packing	94,475	36,696	647,155	214,413
Thread	107,202	63,477	507,453	308,799
Other rubber manufactures	.....	115,546	.....	745,227
Totals	.....	$1,745,190	.....	$9,360,335

Argentina's Crude Rubber Imports

	Pounds	
From	Half Year—1934	Half Year—1935
United States	858,471	2,686,750
United Kingdom	2,258,501	637,530
Germany	469,801	18,150
Singapore	2,596,027	1,551,110
Malay Peninsula	25,353	69,190
Ceylon	1,301,485	718,520
Others	220,349	303,710
Total	7,729,987	5,984,960

Rubber Goods Production Statistics

	1935	1934
TIRES AND TUBES*	May	May
Pneumatic casings		
Production *thousands*	4,050	4,323
Shipments, total *thousands*	3,945	5,172
Domestic *thousands*	3,850	5,049
Stocks, end of month *thousands*	10,797	10,793
Solid and cushion tires		
Production *thousands*	23	19
Shipments, total *thousands*	21	18
Domestic *thousands*	20	17
Stocks, end of month *thousands*	34	29
Inner tubes		
Production *thousands*	3,775	4,228
Shipments, total *thousands*	3,347	4,755
Domestic *thousands*	3,287	4,663
Stocks, end of month *thousands*	10,296	9,741
Raw material consumed		
Fabrics *thous. of lbs.*	7,736	18,785
MISCELLANEOUS PRODUCTS		
Rubber bands, shipments *thous. of lbs.*	293	296
Rubber-proofed fabrics, production, total *thous. of yds.*	4,030	3,908
Auto fabrics *thous. of yds.*	292	594
Raincoat fabrics *thous. of yds.*	1,716	1,778
Rubber flooring, shipments *thous. of sq. ft.*	....	540
Rubber and canvas footwear		
Production, total *thous. of prs.*	4,857	4,919
Tennis *thous. of prs.*	2,376	1,819
Waterproof *thous. of prs.*	2,481	3,100
Shipments, total *thous. of prs.*	3,688	2,927
Tennis *thous. of prs.*	2,579	2,084
Waterproof *thous. of prs.*	1,109	843
Shipments, domestic, total *thous. of prs.*	3,623	2,874
Tennis *thous. of prs.*	2,521	2,036
Waterproof *thous. of prs.*	1,102	838
Stocks, total, end of month *thous. of prs.*	18,202	20,080
Tennis *thous. of prs.*	6,026	7,259
Waterproof *thous. of prs.*	12,176	12,821
Rubber heels		
Production *thous. of prs.*	20,262	19,603
Shipments, total *thous. of prs.*	19,658	20,120
Export *thous. of prs.*	336	137
Repair trade *thous. of prs.*	7,471	6,928
Shoe manufactures *thous. of prs.*	11,850	13,055
Stocks, end of month *thous. of prs.*	35,602	39,763
Rubber soles		
Production *thous. of prs.*	3,607	5,040
Shipments, total *thous. of prs.*	3,701	4,881
Export *thous. of prs.*	6	1
Repair trade *thous. of prs.*	505	493
Shoe manufactures *thous. of prs.*	3,190	4,387
Stocks, end of month *thous. of prs.*	3,733	5,360
Mechanical rubber goods, shipments		
Total *thous. of dollars*	4,944	4,589
Belting *thous. of dollars*	1,109	959
Hose *thous. of dollars*	1,688	1,790
Other *thous. of dollars*	2,147	1,840

*Data for 1934 are estimated to represent approximately 97% of the industry.

Source: *Survey of Current Business*, Bureau of Foreign & Domestic Commerce, Washington, D. C.

London Stocks, June, 1935

			Stocks, June 30		
LONDON	Landed Tons	Delivered Tons	1935 Tons	1934 Tons	1933 Tons
Plantation	5,657	3,303	98,038	45,639	42,979
Other grades	2	1	39	35	53
LIVERPOOL					
Plantation	*2,783	*1,579	*73,131	*54,028	*59,419
Total tons, London and Liverpool	8,442	4,883	171,208	99,702	102,451

*Official returns from the recognized public warehouses.

Imports by Customs Districts

	June, 1935 *Crude Rubber		June, 1934 *Crude Rubber	
	Pounds	Value	Pounds	Value
Massachusetts	4,282,127	$472,467	10,500,445	$1,103,980
New York	52,849,789	5,637,634	87,347,235	8,910,884
Philadelphia	2,509,667	279,528	1,251,254	116,014
Maryland	3,216,517	341,970	3,574,188	321,596
Mobile	208,510	20,706	1,347,817	111,388
New Orleans	1,260,303	112,662	369,507	32,298
Los Angeles	6,243,087	728,990	4,634,871	554,442
San Francisco	659,275	74,458	168,750	17,719
Oregon	22,411	2,463	.....	.....
Ohio	50,921	5,385	448	60
Totals	71,302,607	$7,676,263	109,194,515	$11,168,781

*Crude rubber including latex dry rubber content.

Classified Advertisements

Continued

SITUATIONS OPEN—Continued

WANTED: TWO MEN, AGE ABOUT 25 YEARS, COLLEGE GRADUate, two or three years' experience in rubber factory; for laboratory and sales work. Address Box No. 557, care of INDIA RUBBER WORLD.

MAN, EXPERIENCED AND CAPABLE OF INSTALLING HEATER curing system for pure gum corset materials and rubberized materials, single and double texture. Factory in Brooklyn. Address Box No. 558, care of INDIA RUBBER WORLD.

BUSINESS OPPORTUNITIES

HAVE EQUIPMENT TO INSTALL AND ORDERS FOR BAND tubing in Ohio. Seeking capable, experienced associate with or without capital. Share profits. Address Box No. 550, care of INDIA RUBBER WORLD.

(*Advertisements continued on page* 84)

Classified Advertisements

Continued

MACHINERY AND SUPPLIES FOR SALE

LIQUIDATION—LARGE RUBBER PLANT NEAR BOSTON: ONE Birmingham 20″ by 60″ 3-roll Calender; one Birmingham 11″ by 30″ 4-roll Calender; one Thropp 16″ by 54″ 3-roll Calender; one Birmingham 14″ by 20″ 2-roll Calender; one Royle No. 4 Perfection Tuber; one 8″ by 13″ Laboratory Mixing Mill; four 40″ and 42″ Mixing Mills; one 15″ by 36″ Mixing Mill; one Birmingham 15″ by 24″ Cracking Mill; one Accumulator and Pump; one Birmingham 48″ by 48″ Hydraulic Press, 4-platen, 14″ Ram; one 40″ by 40″, 11″ Ram and three 36″ by 36″, 9″ Ram Hydraulic Presses; one 125 H.P. G. E. 3/60/440 volt motor. Miscellaneous: Baling Presses, Revolvators, Machine Tools, Motors, Steam Pumps, Hydraulic Pumps, etc. Send for circular listing regular stock of W. & P. Mixers, Vacuum Shelf Driers, Calenders, Mills, Colloid Mills, Pebble Mills, Dough Mixers, Hydraulic Presses, Pumps, etc. Rebuilt, guaranteed. What machinery have you for sale? CONSOLIDATED PRODUCTS CO., INC., 13-16 Park Row, New York, N. Y.

FOR SALE: 10′ BY 17″ HYDRAULIC BELT PRESS, five 8″ rams. Oliver Tire & Rubber Co., Oakland, Calif.

FOR SALE: HYDRAULIC PRESSES, TWO 36″ BY 36″ FARREL and four 30″ by 30″ Perrin presses. Address Box No. 552, care of India Rubber World.

MACHINERY AND SUPPLIES WANTED

WANTED: USED 75- to 200-GALLON VERTICAL RUBBER churns, also 40-gallon pony mixer. Address Box No. 551, care of India Rubber World.

INDEX TO ADVERTISERS

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